**ROCKS and MINERALS**

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May - June 1951

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# CHIPS FROM THE QUARRY

## Coming Events

Rocky Mountain Federation Convention, June 8, 9, 10, 1951. Phoenix College, Phoenix Arizona.

California Federation Convention, June 22, 23, 24, 1951. Oakland Auditorium, Oakland, California.
See page 236, this issue, for big Federation field trip.

Midwest Federation Convention, July 2-5, 1951. School of Mines, Houghton, Michigan.

Big Pow-Wow in Washington, (A Rock Hound Convention), July 4, 5, 6, 7, 1951, Vantage, Washington. For information write P. N. Brannan, West 1414 York Avenue, Spokane 12, Washington.

### Midwest Federation Convention, July 2-5, 1951, Houghton, Mich.

Meetings will be held Monday and Tuesday, July 2 and 3, 1951. Banquet Tuesday night. Field trips Wednesday and Thursday, July 4 and 5. Arrangements will be made for a limited number to go to Isle Royale, in Lake Superior, on the Government boat that goes there and back, Wednesday and Thursday (also Friday and Saturday). Headquarters for the meeting, School of Mines in Houghton.

## ROCK HOUNDS TO GATHER IN WASHINGTON

The "All Rock Hound Pow-Wower's" will hold their annual convention July 4, 5, 6 and 7 at Vantage, Washington, on the Columbia River. The members are made up of people from all over the country, and was organized in 1949 with 108 people in attendance. In 1950 the gathering drew 404 people. Nine states and Washington, D. C., were represented. Forty-six towns in the state of Washington also had representation. We had guest speakers from State Parks Department, University of Washington Anthropology Department, and many others.

This year we will have scientific talks, field trips, demonstrations of Lapidary Equipment and talks on silver works. Boat rides on the Columbia River to view the Indian writings and Glyphs. These writings will be covered by water forever when the Priest Rapids Dam is built.

COME ONE—COME ALL for a good time. Bring your own camping equipment. The nearest available cabins are at Ellensburg, Washington, 28 miles from Vantage. Good drinking water, plenty of room. Cafe, Store and gas station for your convenience. Pictures in color and camp fire chin fest every night. Bring your swapping rock.

Visit the famed Ginko State Park and museum while there. You will enjoy every second and will have an outdoor outing that you will never regret or forget.

For further information write P. N. Brannan, West 1414 York Avenue, Spokane 12, Washington, who is Chairman of the Board of Directors.

## REPRINTS AVAILABLE

There have been so many requests for reprints lately that the following bit of information may be of value. They can be supplied and at the following rates:

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| 100 copies | 2 pages | $ 3.75 |
| 100 copies | 4 pages | 7.25 |
| 100 copies | 6 pages | $10.25 |
| 100 copies | 8 pages | 12.75 |
| 100 copies | 10 pages | 15.00 |

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# MUD VOLCANOES OF THE SALTON DEPRESSION

By RONALD L. IVES

### Introduction

During the winter of 1540-41, a small party of Spaniards, under the leadership of Captain Melchior Diaz, crossed what is now known as the Colorado River, and, wandering through the arid lands to the west, came upon "some sand banks of hot ashes which it was impossible to cross without being drowned as in the sea. The ground they were standing on trembled like a sheet of paper, so that it seemed as if there were lakes underneath them. It seemed wonderful and like something infernal, for the ashes to bubble up here in several places (1)." This is probably the earliest description of one of the groups of mud volcanoes in the Salton Depression, occupying parts of southern California and of Baja California (Mexico).

During the early summer of 1949, four hundred and eight years after the first report, a field study was made of all of the mud volcanoes of this interesting area, much of which is below sea level. Abridged descriptions of the two major mud volcano areas comprise this report.

### Location

The Salton Depression, containing the Salton Sea, the Colorado Delta, and a number of intermittently-connected desert playas, straddles the U.S.-Mexican boundary west of the Colorado River and east of the Sierra de Juarez. The area is a great depressed fault block, most of which, in former times, was covered by the waters of the Gulf of California. During the later part of the Pleistocene, the growing delta of the Colorado isolated the northern part of the depression, and the water level was lowered by evaporation, so that the northern basin, now occupied by the Salton Sea, has dry land as much as 250 feet below sea level.

General topography of this area today is shown in Fig. 1, a summary map from which minor features not pertinent to this report are omitted (2). Along the numerous faults bounding this depression, hydrothermal phenomena of various sorts are numerous. The many hot springs of the region have been described competently elsewhere (3); although many of the descriptions are now somewhat obsolete, due to changes in the drainage pattern of the area.

### The Alamo River Mud Pots

Boiling up through a sea of viscous bentonitic mud, near the mouth of the Alamo River, not far from the shore of the Salton Sea, is a group of boiling mud pots, of rather impressive appearance. These are best reached from the town of Calipatria (Fig. 1) by taking the paved road north toward Niland for about 6 miles, then turning left (west) on a paved road, which is plainly marked "MUD POTS." About five miles west of this turning, the mud pots and their associated

(1) Winship, G. P. THE JOURNEY OF CORONADO, New York, 1922, p. 59.

(2) A thorough study of the Colorado delta area is contained in Sykes, Godfrey, THE COLORADO DELTA, joint publication of the Carnegie Institution of Washington and the American Geographical Society of New York, 1937. This monograph, which contains 193 pages, is competently illustrated with excellent photographs and extremely good maps, and includes an extensive pertinent bibliography.

(3) Stearns, N. D., Stearns, H. T., and Waring, G. A. THERMAL SPRINGS IN THE UNITED STATES, U. S. Geological Survey Water Supply Paper 679-B, 1937, pp. 91, bibliography pp. 99-101.

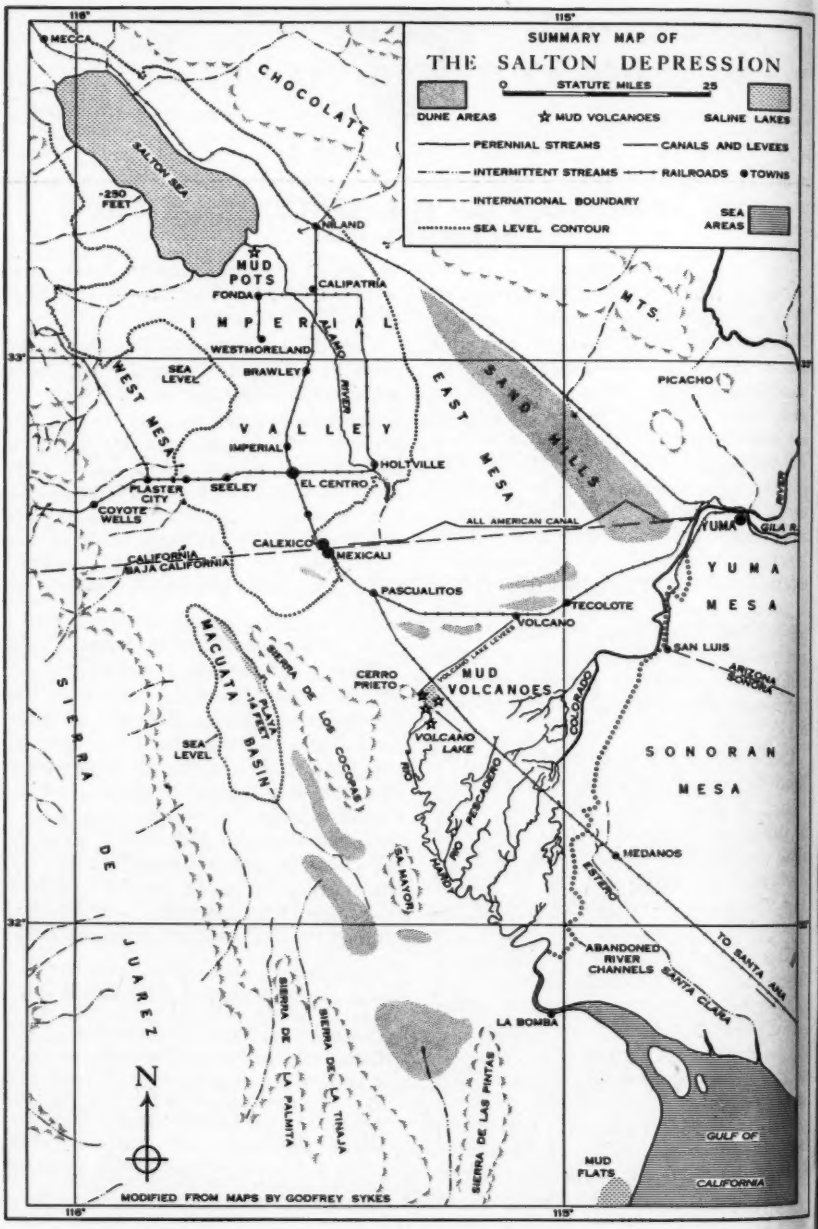


**Fig. 1**

**Summary map of the Salton Depression, showing major features, important townsites, and locations of mud volcanoes.**

hot springs and pools are clearly visible on the left. Nearby are a group of obsidian buttes, probably formed by volcanic activity during the very late Pleistocene.

There are about 30 mud volcanoes in this group, which covers an area of about 1000 by 1500 feet. About half of the mud cones are visibly active. Hot water, percolating upward from below, keeps the local bentonitic clay in a plastic state, and steam and other gases, also rising from below, blow bubbles in the viscous mud, as in Fig. 2. These, when expanded into an approximate hemisphere, break with a characteristic popping noise, showering the environment with small particles of mud, and releasing mephitic vajors.

Water from these springs contains iron and sulphur, with varying amounts of salt. Adjacent dry muds contain crystals of gypsum and salt. Several local analyses indicate the presence of small amounts of boric acid and lithium salts in water from the adjacent hot springs. Despite the presence of sulphur, these springs do not have the characteristic "rotten egg" odor of most sulphur springs, but smell more like unwashed feet.

These mud volcanoes have undergone many vicissitudes during the last century. First mentioned in technical literature by J. L. LeConte in 1855 (4), and described fully in 1857 (5), they remained substantially unchanged, although with minor changes in the intensity of their eruptions, until about 1904 (6).

During the winter of 1904-1905, as a result of silting of older channels of the

(4) LeConte, J. L. AMERICAN JOURNAL OF SCIENCE, Vol. 19, May, 1855.

(5) Veatch, J. A. NOTES ON A VISIT TO THE "MUD VOLCANOES" IN THE COLORADO DESERT IN THE MONTH OF JULY, 1857. Amer. Jour. Sci. Vol. 26, series II, 1858, p. 288.

(6) James, G. W. WONDERS OF THE COLORADO DESERT, Boston, 1906, Vol. 1, pp. 81-86.

**Fig. 2**

**A large steam bubble forming in a mud volcano of the Alamo River Group. The largest bubble is approximately six inches in diameter. Note the concentric ripples near it, formed by the breaking of other steam bubbles.**

Colorado River, flood waters enlarged the irrigation canals leading into the Imperial Valley, rapidly enlarged the Salton Sea, and for a time threatened to fill it up to sea level. This inflow continued, despite desperate efforts to stop it, until about 1907, at which time the mud volcanoes of the Alamo River area were under 31 feet of water, and behaved as boiling subaqueous springs.

Ending of the inflow to the Salton Sink led to a gradual recession of the waters of the Salton Sea, and by about 1920 the mud volcanoes began to regenerate, and now appear about as in the older descriptions. As a result of these changes in water level (7), it can be stated with great confidence that the complicated mud structures near the Alamo River (Fig. 1) are not more than 30 years old, and that their growth is continuing today (Fig. 3).

Geologic factors responsible for these mud volcanoes are not fully known, but a rational explanation of their origin can be derived from available evidence. The mud volcanoes are situated on recent alluvium, which rests on tertiary sediments. Close to the site of the hydrothermal activity is a group of recent volcanoes, which lie along a fault, probably related to the San Andreas system, which extends from San Gorgonio Pass southeastward along the east side of the Salton Depression, and probably extends out under the Colorado Delta and the Gulf of California. Geothermal gradients in this area are above normal, indicating that hot rocks are not far below the surface.

On the basis of this evidence, the mud volcanoes are caused by meteoric waters percolating downward through porous members of the Tertiary strata, and becoming heated on contact with volcanic materials at no great depth. These waters then escape upward through the strained zone above the fault, reaching the surface through the slightly bentonitic clay that forms the delta of the Alamo River. It seems probable that the iron and sulphur content of the water comes from the buried volcanic materials, and that the salt, boric acid, and perhaps the lithium salts, are derived from solution of components of the Tertiary sediments, which contain salt and borax in some locations. Somewhat saline artesian water, cooler, and not containing iron and sulphur, is found in other parts of the Salton depression.

The Alamo River group of mud volcanoes is a "textbook" example of such structures which is easily accessible by road. A visit to them from El Centro, on the main transcontinental highway (U. S. highway 80), requires only about three hours, and travel conditions in this area are good about 350 days in the year. Although summer temperatures here tend to be quite high, humidity is low, so that no great difficulty is normally experienced from heat. Winters here are very mild, resembling spring weather in the more northerly parts of the United States.

### The Volcano Lake Hydrothermal area

Scattered about over an area approximately two by five miles, in the silted-up bed of Volcano Lake (Laguna de los Volcanes), south and east of Cerro Prieto, in the Mexican State of Baja California, are a large number of hot springs, warm lakes, and mud volcanoes, in various stages of development and decay.

This area is best reached by road from the Mexican border community of Mexicali. From Mexicali, take the San Luis road southeast to Pascualitos (Fig. 1), then turn half right, on an improved dirt road, to Cerro Prieto. Customs officers at the Pascualitos station can give clear road instructions (in Spanish). At the base of Cerro Prieto, a black hill composed of recent basalt over a core of red volcanic breccia, the road becomes bad at most seasons, and the various hot springs are best reached afoot, using due

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(7) Sykes, Godfrey, *op. cit.* pp. 112-117, map. p. 118.

MacDougal, D. T. THE DESERT BASINS OF THE COLORADO DELTA, Bull. Amer. Geog. Soc. Vol. 39, 1907, pp. 11.

Brown, J. S. THE SALTON SEA REGION, CALIFORNIA, U. S. Geological Survey Water Supply Paper 497, 1923, pp. 118-119; excellent included bibliography.

Fig. 3
Concentric bubble scars on a mud cone in the Alamo River group of mud volcanoes. Width of this view is about eight feet.

caution not to break through salt and mud crusts into nearly-boiling water.

There are four major groups of hot springs in this area (Fig. 1). The northernmost group, always accessible by road, consists of about a dozen mud spatter cones, an equal number of hot pools, and about five acres of warm lake. The principal group of vents here is shown in Fig. 4. Although the volume of hot water welling up here is much greater than that at the Alamo River area, the phenomena are at present less impressive.

The central group on the west side of the Volcano Lake Basin (now filled with Colorado River silts) consists of about twenty warm springs and a warm lake. The warm springs, which contain iron and sulphur, have been dug out in an effort to develop a health resort. The waters are reputed to benefit rheumatism. Water temperatures here are lower than in the northern group of springs, and the warm lake is at about 100° F. The lake, which is quite shallow (Fig 5), is floored with soft mud and thick mats of green algae. Several hot spring cones, covered with dense growths of grass, project upward through the lake waters, forming small islands.

A central group of hot springs on the east side of the Volcano Lake basin, accessible at most seasons from the right-of-way of the Ferrocarril Intercalifornia al Sur (Sonoran Railroad) has much the same appearance, but is of smaller dimensions, and the water is not as warm.

The most impressive group of mud volcanoes in the Volcano Lake area, the southernmost group, and probably the group visited by Melchior Diaz in 1541, is currently (July, 1949) under water, and may have been largely obliterated, since 1905, by delta deposition of the Colorado River. An excellent photograph of this area, before silting-up of the lake, was published by Sykes (*op. cit.* Fig. 29). At the time of the writer's visit, the southernmost group consisted of about 50 small mud spatter cones, rising a few inches above a shallow muddy lake, through which steam and gases bubbled up at many locations. Access to the spatter cones was made impossible by deep flocculent mud. Even in its present submerged state, this is one of the largest hydrothermal areas in North America outside of Yellowstone Park.

According to the local Cocopah Indians, the mud cones are accessible during winter periods of low water, and look, during these times, much like Sykes' photograph, taken in 1905. They also report that these mud volcanoes have been active since the creation of the Universe, and that when men were made, an assistant tribal Deity used this clay, which does not fire well, to make white men, while the chief tribal Deity, with infinite wisdom, made the Indians from good red clay, which stands firing! A check on the Indian report of accessibility during dry seasons seems desirable. Verification of the creation legend seems not within the realm of scientific investigation!

In the Volcano Lake area it appears that hydrothermal activity has continued unchanged for more than 400 years, and that even rather marked changes in the regional surface drainage have no great effect on the mud volcanoes and hot springs. These springs, from the alignment of the three western groups, seem to be related to a southward extension of the San Jacinto fault system, which has been traced from the western side of the Salton Depression through Calexico to Cerro Prieto. It is believed to continue southeastward to and under the Gulf of California. As with the Alamo River Mud Pots, the hydrothermal activity is concentrated close to an area of recent volcanic activity (Cerro Prieto).

Although it is possible to visit the northern group of springs at Cerro Prieto during a three-hour round trip from Mexicali, with good luck, the journey from the end of the paved road (Paucalitos; Fig. 1) to the other groups of springs and mud volcanoes is quite difficult, and should not be undertaken without due regard for bad roads, high water, deep mud, and isolation. Temperatures and humidities here are both high during the summer, so that field work is quite uncomfortable. After visiting the

Fig. 4
Northernmost group of mud volcanoes and hot pools in the Volcano Lake area. In the immediate foreground is a medium-sized pool, too hot for swimming. Small knolls in the near middle distance are feeble mud volcanoes, behind which is a warm, malodorous lake. Black hill at right is Cerro Prieto, composed of volcanic materials of no great geologic age.

Fig. 5

Hot spring cone, covered with grass, in the warm lake at the central group of hot springs in the Volcano Lake area. The shallow warm lake is floored with soft mud and mats of algae, and is fed not only by hot springs along its shore, but by upwellings of warm water from under the bed.

area in summer, and encountering both high temperatures and high water, the writer recommends winter trips to the Volcano Lake area.

### Other Features

Although the mud volcanoes of this area are of great interest, many other features of the Salton Depression are also worthy of observation. In the area between Yuma and Holtville (Fig. 1), the great *barchan* dunes are almost perfectly formed, and photographs of them, usually by Mendenhall, grace many textbooks.

Between 25 and 30 feet above sea level, in many parts of the Salton Depression, is an ancient shoreline, remnant of the days when Lake Cahuilla, a body of fresh water, filled the depression to a depth of nearly 300 feet. Fresh-water shells can be found in many places along the ancient shoreline.

The Tertiary beds of the Imperial Valley (and adjacent areas) give evidence of repeated alterations from playa conditions to marine conditions, so that alternating beds of fossils and gypsiferous shales are found. In the Yuha area, about 10 miles southeast of Plaster City (Fig. 1), "museum quality" fossil *pecten* shells can be gathered by the hundred.

Most of the area to the west of the Salton Depression has been uplifted and intruded, so that many minerals are present. Salt, gypsum, and iron ore are produced on a commercial scale at present; gold, copper, silver, lead, manganese, and bismuth are produced on a small scale from the mountains west of the depression. Gem stones, such as beryl, tourmaline, kunzite, and garnet are found in many places, but commercial production is seldom attempted. Borax is found in many small deposits in the Tertiary sediments; and celestite (strontium sulphate) is found interbedded with gypsum northwest of Plaster City (Fig. 1). Small amounts of graphite have been reported from the area, and some tungsten and vanadium has been produced (as a by-product — sometimes "poisoning" other ores).

Although sulphur is found in the waters at both the Alamo River and the Volcano Lake hydrothermal areas, no commercial production has been reported, nor is such economically probable.

The Imperial Valley also furnishes a striking example of what irrigation can do for what was once a desolate and "worthless" wasteland. Here, by means of a vast and expensive system of canals and ditches, lands which a generation ago were entirely barren are now producing two, three, and even four crops a year, supplying both "in season" and "out of season" produce to markets in the United States and Mexico.

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## GARNET MINE AT MINOT, MAINE

By CHARLES F. MARBLE

Buckfield, Maine

Through the courtesy of Mr. Pitts, the owner, I recently visited the old cinnamon garnet mine in Minot, Maine—a place I had wished to see for many years. It was opened about 50 years ago and worked a little as the opportunity occurred. These garnets are well known and highly prized for their size and beauty. They are mostly opaque and in places the crystals are mixed with other minerals.

The best specimens occur in calcite and/or quartz in bands here and there in the metamorphosed rock. Other minerals found at the locality are scapolite, diopside, pyroxene, quartz, calcite, possibly axinite, and of course the garnet.

The deposit is not by any means worked out and we may expect to see more specimens from it as they get time to work it.

# CALIFORNIA FEDERATION FIELD TRIP

## (JUNE 25, 26 AND 27, 1951)

The Annual Field Trip for the California Federation of Mineralogical Societies will be held June 25, 26 and 27, 1951, beginning Monday morning after the close of the California Federation Convention at Oakland on Sunday night, June 24. This trip will be comprised of several outstanding geological and mineralogical localities in Northern California.

The trip has been arranged to provide an opportunity for the study of geology and how the various minerals were formed. The East Bay Mineral Society is sponsoring the three day field trip and Robert Deidrick, assisted by experts in Lapidary, Mineralogy, and Geology, will act as leader. There will be a field testing laboratory whereby any unusual material found can be tested.

At the Convention Headquarters there will be a display showing the rough and polished material as well as specimens of the minerals to be found on this trip. To further acquaint you with the geology of the country and the material to be collected, on Sunday, June 24, there will be a brief lecture on the field trip in general.

The trip has been arranged whereby those wishing to camp can do so, or there will be hotel or motel accommodations for persons desiring them. It will be necessary to make arrangements in advance for the hotel or motel reservations.

On Sunday, June 24, there will be a short field trip to the Leona Heights pyrite mine to collect melanterite, halotrichite, boothite, and pyrite XLS. The three day field trip will start at 9:00 A. M. Monday, June 25, in front of the Exposition Building in Oakland, California.

From there we will journey North to the Fairfield onyx deposits. It will be necessary to walk about one-half mile to the deposit. You will need a heavy hammer, prospector's pick, and knapsack. You will collect fine calcite onyx in sufficiently large pieces that beautiful book-ends or spheres may be cut from them. There is also crystallized aragonite to be collected there.

From the Fairfield onyx deposit, we will go to the Kohler Chase asbestos mine, there collecting asbestos. The next stop will be the famous Knoxville mine and Reddington mine. There we will collect the only true quartz onyx in California, also opal, chrysoprase, barite, metacinnabar, cinnabar, pyrite, marcasite, calcite, halotrichite, and myrickite. This may also be the first night's camp, while those that have motel reservations will journey to Clear Lake.

The next morning, Tuesday, June 26, we will visit the Sulphur Bank mine; there collecting fine sulphur XLS, cinnabar, opal, and stibnite. From there we will take a short side trip to Borax Lake where borax was first mined in California, there collecting borax.

Journeying South, we will go over Cobb Mountain and there collect Lake County "diamonds" for those who do faceting. We shall also stop at a pectolite locality. This material will cut and polish as well as fluoresce and phosphoresce. We will stop at Mt. St. Helena, visiting the old silver mines.

From Mt. St. Helena, we will visit the Petrified Forest, and then proceed to the Sonoma County Geyser Basin. There will be camping as well as hotel accommodations at the Geyser Basin.

The Geyser Basin is one of the most interesting areas of its kind. Here the so-called geysers eject steam into the air for a distance of a hundred feet or more. These are true fumaroles and here minerals are still forming. The following minerals may be collected: sulphur XLS, alunogen, diallage, epsomite, gypsum, halotrichite, pyrite, marcasite, mascagnite, mendozite, pickeringite, stellerite, williamsite, cinnabar, native mercury in sandstone, and chrysolite. Also at the Geyser Basin you can enjoy good trout fishing in Big Geyser Creek, take radioactive steam baths, and bathe in an out-

door swimming pool. From the Geyser Basin we will return to Oakland by way of Skagg's Springs there collecting some of the highly fluorescent curtisite. It will be necessary to have heavy hammers, prospector's picks, cardboard boxes and bottles to collect these specimens.

For reservations please notify Bob Deidrick, 7051 Broadway Terrace, Oakland 11, California.

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## FAMOUS GREEK MINES GET U. S. AID

Washington, December 14, 1950—Ancient mines which once yielded fabulous treasures to finance the commercial and military supremacy of the city state of Athens, may again play an important role in the economy of modern Greece and in building the defenses of the free world.

The Economic Cooperation Administration today announced that Mediterranean Mines, Inc., an American mining firm operating in Greece, will receive an advance of $102,193 to expand operations in the historical Laurium (Lavrion) mines near Athens. The operation will provide lead and zinc for the United States stockpile of strategic materials and for export to other Marshall Plan countries.

In addition to dollars, ECA will advance 10 million drachmae (about $666,000) from its special five percent counterpart fund for the mining project in the Attica district, 25 miles southeast of Athens. Counterpart funds accumulate as the Greek Government deposits drachmae to match ECA dollar grants. The firm will repay the ECA advance with shipments of lead and zinc to the U. S. stockpile over a period of three years.

Marshall Plan aid in the exploration of this area, which was mined as early as 1,000 B. C., began in November, 1949, with the development of the Sounion-Aulaki-Vromopoussi mine and the construction of a 200-ton capacity concentrating plant.

Judging from the dumps of the old workings at the Laurium mines, modern geologists estimate that silver to the value of $800 million was produced during the three centuries of top mining prosperity in the district (beginning about the middle of the sixth century B. C.). It was the silver of Laurium which enabled the small city state of Athens to win, and for several centuries maintain, her supremacy in the world of commerce. Greek writers of the day described the mines as "a fountain, running silver, a treasure of the land."

As the rich ores were exhausted, Athens declined as a world power. The mines have been worked intermittently in modern days, principally in the field of reclaiming and re-treating the millions of tons of mine waste and tailings. The last period in which the mines have lain deserted has been from 1931 until Mediterranean Mines, Inc., became interested in the old workings.

Mediterranean Mines, Inc., is incorporated under the laws of the State of Delaware, with head offices in New York City.

For Greece, the new project is particularly important because it is expected to increase Greece's exports of metals to other Marshall Plan countries, and will also provide additional local employment.

(The ancient silver mines of Laurium are famous for their minerals of which smithsonite, just to mention one, occurs in very fine gem masses, often of large size. This gemmy smithsonite is beyond a doubt the finest known and has been much used for ornaments, etc., as it takes a beautiful polish. Laurium is Greece's greatest mineral locality).

# THE COPPER COUNTRY OF MICHIGAN

By SAM SPECK, Jr.
(13 Years Old)
Bentler Road, Route 2, Louisville, Ohio

On our recent trip through Wisconsin and the Upper Peninsula of Michigan, we found that if we would take the northern route through the Upper Peninsula up to the Keweenaw Peninsula, it would not only be wild and picturesque but probably be an excellent place to see some copper mines first hand.

We got an unexpected surprise when stopping for gas at Mass, Michigan. Dad asked how the town got its name. The attendant said that it originally got its name from the copper mines which used to be in the vicinity. We asked him if it would be possible to get any specimens and he said he thought so and gave us instructions as to how to get to the best mine dump near by. About one-half mile west of Route 26 we discovered the old mine dumps.

The station attendant had also said that they were now considering reopening the mines because it is believed there is still copper in them. The reason this hasn't been done so far is that the cost has been considered too great for what they might get in return.

As I am a pebble-puppy, I am not yet familiar with all the minerals, but with little effort I discovered some specimens of white feldspar. Soon after picking up many rocks I found a piece of native copper. The Upper Peninsula is noted for this type which is found in few other places to great extent. A short time later I again found another piece about 2 x 3 x ¼ inches on a large boulder. This time I had to use my pick and Dad's knife to pry it off.

By this time we were all so hot, for the rocks reflect the heat, and the car was so nearly filled with specimens that we decided to call it a day. We were soon on the road to Houghton, the old copper center.

When we reached Houghton and Hancock which are twin cities, we got another surprise for all but a very few of the mines were abandoned and either in the process of being taken down or already torn down. As it was Sunday, the few mines that still operated were idle so we didn't get the chance to go through one until the next day.

As we progressed along the road, we noticed many signs of mines that had been there during the days of the copper rush in about 1850-1865. As we came to Mohawk, we noticed that the mines there were in full scale operation. We continued up to Copper Harbor and spent the night.

The mines were operating the next day. We stopped at the Keweenaw Gift Shop which had advertised in ROCKS AND MINERALS and brought a specimen of native copper and silver. Then we stopped at the Ahmeek Copper Mine. The men there were very courteous and showed us through everything but the shaft which visitors aren't allowed to go down any more. One man, whom we talked to, has worked there 48 years and can remember when they still used mules.

We saw the largest cable hoist in the world which filled an entire building. The cable had a breaking test of 80 tons but usually carried only 20 tons. It was 8,000 feet long but the shaft is only a mile deep. The reason for the cable being longer is that it must go a distance before reaching the shaft. The shaft is about a mile deep and runs about two miles underground to another mine shaft. This has been made in case of fire or an explosion. One of the miners gave me two specimens containing native copper.

After seeing the mine we decided to take a look at the mine dump where we soon found an old miner's lamp and some specimens with nodules of native copper in and on them. We also found two more pieces of native copper about 2½ x 3 x ¼ inches which I later cleaned with hydrochloric acid.

We thought it very interesting and worth our while to make the trip through the copper country.

# THE CHAPEL OF RAINBOW ROCKS

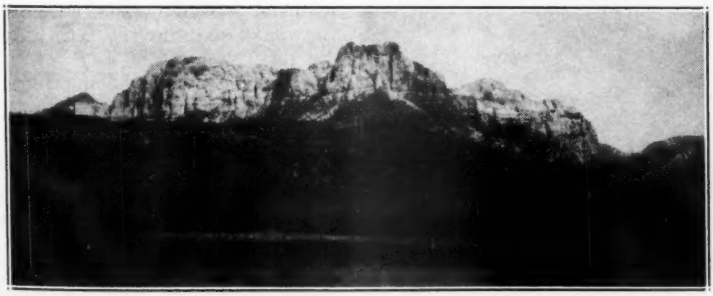
By MARGARET D. BENSUSAN, F.R.G.S.
8615 Columbus Avenue, Sepulveda, Calif.

To find out about the rock and mineral make-up of a given area usually requires effort. In southwestern Utah, however, such information can be had merely by viewing the Cedar City First Ward Chapel. Though architecturally conventional, this large and handsome English style church, with half-timbered gables, is far from conventional in the stone of which it is constructed. Instead of the customary uniform, dressed blocks, it is built of an assortment of rock specimens displaying all the colors of the spectrum. It is a compendium of the rocks and minerals of all the country round!

And, indeed, what a country that is for vivid and significant stone material! Cedar City is on Highway 91, which, on its way north and south across Utah, follows the line of demarcation between two distinct geological features, the Basin and Range Province and the region of the Colorado Plateaus. Along the west lies that vast depository of fossil rock known as the Great Basin, where desert ranges repose like supine beasts bogged down in the ancient sediments. One range near Cedar City consists of almost untapped mountains of iron.

Eastward, however, the country is quite different—a zone of tablelands and faults. For many miles the stupendous Hurricane Fault extends a little to the east of Highway 91, roughly parallel to it and sometimes visible from the thoroughfare. On the east side of this break, the strata have been uplifted. Coal Creek Canyon Road (State 14), leaving Cedar City on the east, goes right up into a lofty plateau known as the Markagunt (meaning "highland of trees" in the Paiute tongue). It reaches heights of over ten and eleven thousand feet, with tremendous drop-offs, one of which is the flamingo-tinted erosion comprising Cedar Breaks National Monument. Another sweeping declivity falls from Brian Head (11,315'), and overlooks lava-strewn Kolob Terrace and the painted precipices of Zion. Within a fifty mile radius of Cedar City, ridges of basalt, cinder cones, Vermillion Cliffs, and the Virgin Anticline are other special features of southern Utah's contorted landscape.

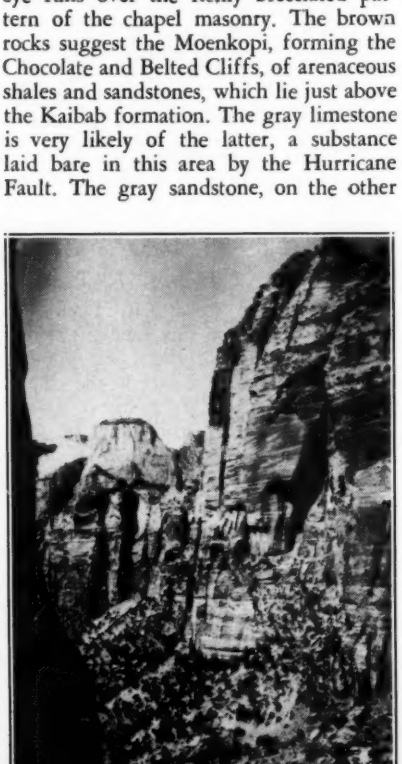
For their construction materials, the builders of the Cedar City First Ward Chapel drew upon this fabulous domain of rocks unlimited. From any point on the chapel lawn, a glance at the colorful mosaic exterior yields a list of twenty-five to thirty different kinds of stone. The district supplying them is in the greatest area of continental Triassic deposits in North America, so sandstones and shales are well represented, together with the conglomerates and petrified woods which strata of this age contain. The Triassic is sandwiched between the gray Kaibab limestone of the Permian



**The mountains shown are of Chinle and Navajo Formations. Zion National Park, Utah.**
Photo by Guy Bensusan

Age and the Jurassic layers of red to white Navajo sandstone, plus the bluish to white Carmel limestone, which also may belong to the Jurassic. Examples of these rocks form part of the building material.

In this part of the country, where the geological formations are everywhere so magnificently exposed, one is especially conscious of the sources of rock materials. These come to mind inevitably as the eye runs over the richly brecciated pattern of the chapel masonry. The brown rocks suggest the Moenkopi, forming the Chocolate and Belted Cliffs, of arenaceous shales and sandstones, which lie just above the Kaibab formation. The gray limestone is very likely of the latter, a substance laid bare in this area by the Hurricane Fault. The gray sandstone, on the other hand, is a product of the Shinarump formation, and is the same material of which the jagged limbs of the mighty Virgin Anticline are composed.



**The Painted Cliffs of Zion.**
Photo by Guy Bensusan

The Shinarump, too, provides the gaudy conglomerate, or puddingstone, seen in the chapel walls, while fossil wood comes from the same level and from the lower part of the Chinle formation, just above it. The builders used some very handsome specimens of silicified wood, ranging from glossy black to varigated, in many shades.

The exposed strata most predominant in the southwestern Utah scene are the Chinle and the Navajo. These are the sources of a wide variety of beautifully colored and marked sandstones employed. They include pinks, tans, yellows, mauves, and creamy white, many of which are striped and banded picturesquely from uneven multiple leachings of limonite and purplish manganese solutions. Some have the deep orange flush of "Vermillion Cliffs," as Major Powell designated the Chinle exposures during his 1870 explorations, and thus contributed a term to geology. The Navajo sandstone, seen above the Chinle in taller cliffs, such as those at Zion National Park, were once dunes—in fact, they are one of the greatest consolidated sand dune formations of the Earth.

To the limestones already mentioned earlier in this list should be added the lovely variety from the Wasatch Pink Cliffs of the Eocene, the substance of the Cedar Breaks level, high up in the Markagunt Plateau. The structure also contains fossiliferous limestone, from a canyon close to the city. The several beds of fossil shells there, each bearing a different kind, mark the interfingering of the redbeds by marine members of the older Triassic, from the west.

Evidences of volcanic activity, so widespread in this part of Utah, are represented in this building by red and black lavas, all types and colors of obsidian and elvin, or greenish porphyry.

Besides the agatized woods, a great number of agate specimens have been used, in variety too plentiful to describe. Chalcedony, too, has been included, some

of the pieces sparkling with drusy patches. Jasper of every kind, some distinctly gemmy, and beautiful blue opalite further represent the quartz family.

Azurite and malachite complete the prismatic scale in this chapel of rainbow rocks. Some of it shows up, too, in the staining of white sandrocks, which make their own contribution to the sum total of beauty. These copper ores come from somewhat farther afield. One source was the famous old Apex Copper Mine, near the Arizona border, nineteen miles southwest of St. George. As experienced collectors know, in its earlier days that locality produced some of the choicest specimens of these minerals now seen in fine collections. Other copper-bearing rocks were brought from the Ryan district, in the Kaibab Forest, near the North Rim of the Grand Canyon.

Thus are the stones of this house of worship inextricably linked with the earth lore of the region and with its unforgettable scenic components. Was the chapel, then, the work of inspired rockhounds? As strangers driving through Cedar City, we had often wondered. As guests at the mineral show held there last September by the local Rock Club, we finally got the story of this creation, and learned that it is really *the product of austerity!*

In 1930, the Latter Day Saints of the First Ward found themselves without a meeting place, because their former one was torn down to make room for a federal building. It was during the depression, when funds were short and lists of the unemployed were long. But the bishop of those days, Frank Wood, went ahead and selected a building committee. Tackling their problems after the Mormon pioneer fashion which had already gone down in history, they took stock of what was on hand, and shaped it to their ends. Every member of the First Ward was levied for labor, cash, or materials, and in May, 1931, construction began. Those who worked on the project were paid three dollars a day, two of which went back into the building fund. For the unemployed, that meant keeping their families on a dollar a day.

Some laid the foundation and erected the inner walls of old brick from the demolished church. Others went out into a nearby canyon and milled plaster of the abundant gypsum they knew was there for the taking. To this plaster is attributed the excellent acoustics of the chapel auditorium.

From the iron mine in the previously mentioned range of iron mountains, west of the city, came the metal for the handsome wrought iron grilles, chandeliers, and other such appointments. This had special significance, because Cedar City owes its founding (1851) to the Iron Mission, sent by Brigham Young to that district to work the then recently discovered ore deposits. A field trip to that site was held by the Cedar City Rock Club on the occasion of their show last autumn.

Another natural resource drawn upon was red cedar from the surrounding foothills. With it they panelled much of the interior in a style proverbial of Solomon's Temple, made the pews, altar rail, bannisters, door frames, curtain rods, and articles of church furniture. As the trees were small, the labor of gathering so much and then kiln drying it under steam pressure was immense.

Sheep farmers donated wool, which congregation women wove into carpeting still in use today.

But what naturally intrigues us most was the garnering of the rocks. Bishop Frank Wood, contractor George Wood, and William Adams, in charge of supply, made many scouting trips into the neighboring mountains, then sent squads of men in trucks to collect the stones. The idea of using them was suggested by the contractor, who, as a Mormon missionary in Germany, had seen a building of this kind. The freight alone on brick for the chapel would have run to several thousand dollars, so hunting native stones was a happy solution to the money problem. Still, not a few of the building committee were adverse to the notion of a church of many colors. However, along with Salt Lake City's leading church architects, they had obtained the services of two highly skilled stone masons from the state

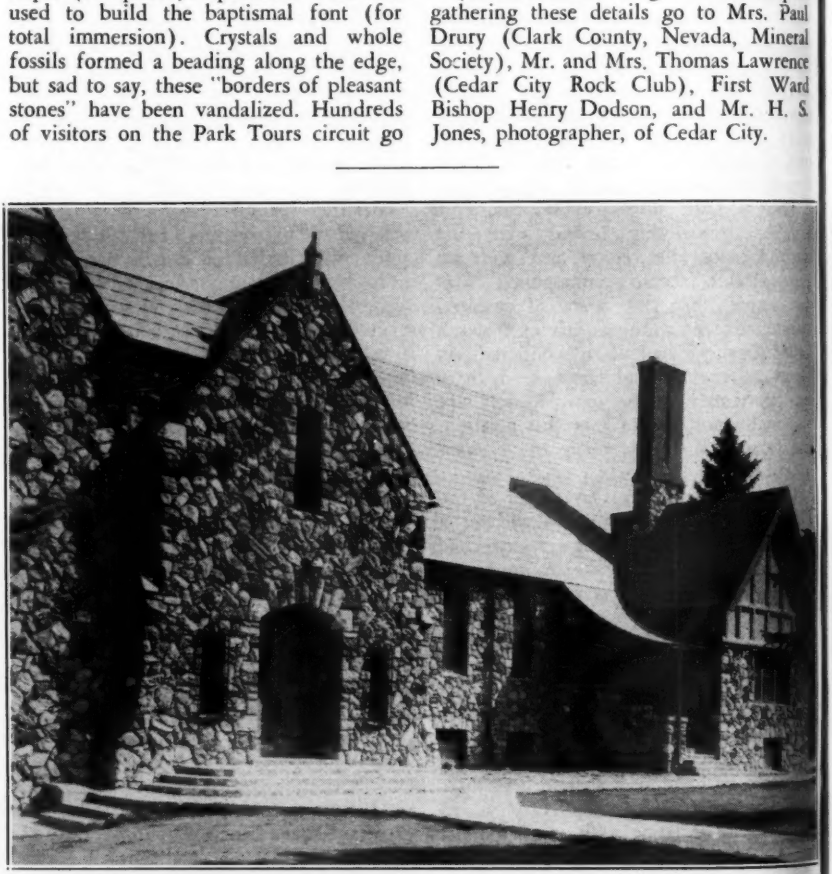
capital to direct the work. As the walls grew larger, enthusiasm for the resplendent effect increased.

The rocks were kept in piles, assorted according to color. When any particular color began to run low, the masons notified Adams, who never failed to round up the desired material on time. This was rock hunting on a grand scale.

An appealing bit of detail in the work is the inlay of small, brightly colored specimens in the risers of the entrance steps. (See photo). Specimens were also used to build the baptismal font (for total immersion). Crystals and whole fossils formed a beading along the edge, but sad to say, these "borders of pleasant stones" have been vandalized. Hundreds of visitors on the Park Tours circuit go through the chapel yearly.

It took three years for the four to five hundred people engaged in its erection to finish this structure, one in which any community could take vast pride for its beauty of workmanship and supreme fitness. It captures the glowing colors of Utah's landscapes, the blue of her clear skies, the green and golden glory of her autumn forests. Isaiah LIV, 11: "I will lay thy stones with fair colors," could have been their text.

(Grateful acknowledgments for help in gathering these details go to Mrs. Paul Drury (Clark County, Nevada, Mineral Society), Mr. and Mrs. Thomas Lawrence (Cedar City Rock Club), First Ward Bishop Henry Dodson, and Mr. H. S. Jones, photographer, of Cedar City.



H. S. Jones, Zion Picture Shop, Cedar City, Utah

**A never-ending delight to rock lovers is this chapel of rainbow-colored specimens at Cedar City, Utah. The stones were obtained by the builders on rock-hunting trips in the surrounding country. To the left, the building rises to a lofty steeple.**

# WOOD'S CHROME MINE, LANCASTER COUNTY, PENNA.

By L. J. DUERSMITH
Curator of Mineralogy
Franklin and Marshall College Museum, Lancaster, Penna.

During the year of 1950, the writer had received so many requests for information concerning the famous Wood's Chrome Mine, in southern Lancaster County, Pennsylvania, that he came to the conclusion an article describing and bringing up to date this mine would be in order.

## History

There seems to be some discrepancy as to what mineral this mine first produced. One source states that the first mineral was the 'magnesian rock for the production of Epsom Salts'; another lists magnetite and a third credits the chromite as the original mineral.

The records show that the mine was first opened in the year 1828 by Isaac Tyson, of Baltimore, Maryland, and continued until 1882, the last year being devoted to the unsuccessful attempt to find a continuance of the deposit. The Wood's Mine is estimated to have produced 100,000 tons of chromite and was at one time the largest source of chrome ore in the world, supplying nearly 100 percent of the total production prior to the Civil War. The mine was dewatered in 1937 and examined to its lowest level (about 720 feet) and no ore remains that would be of commercial use. In 1941 an investigation, by magnetic and gravitational survey, conducted by the U. S. Department of Interior, Bureau of Mines, failed to locate any extention of the ore body or to outline any other ore body in this vicinity.

One of the most amazing features of this mine was the method of pumping the water out of the shaft during operation. The power for pumping was derived from the Octoraro Creek, which was a distance of 1080 feet from the engine shaft. A wooden breast wheel, 16 feet high and 18 feet long, was used under a 10½ foot fall of water. The motion was transferred to the shaft by a 6 inch by 8 inch wooden flat rod more than 1000 feet long. This rod traveled on a four foot stroke over wooden friction rollers delivering an equivalent of a 60 horsepower engine to the pump. I have often tried to reconstruct, in my imagination, the site of this engineering feat but it defies my best efforts.

**Entrance to Wood's mine property at gate on curve in road to Lee's Bridge. Sunday, December 3, 1950.**

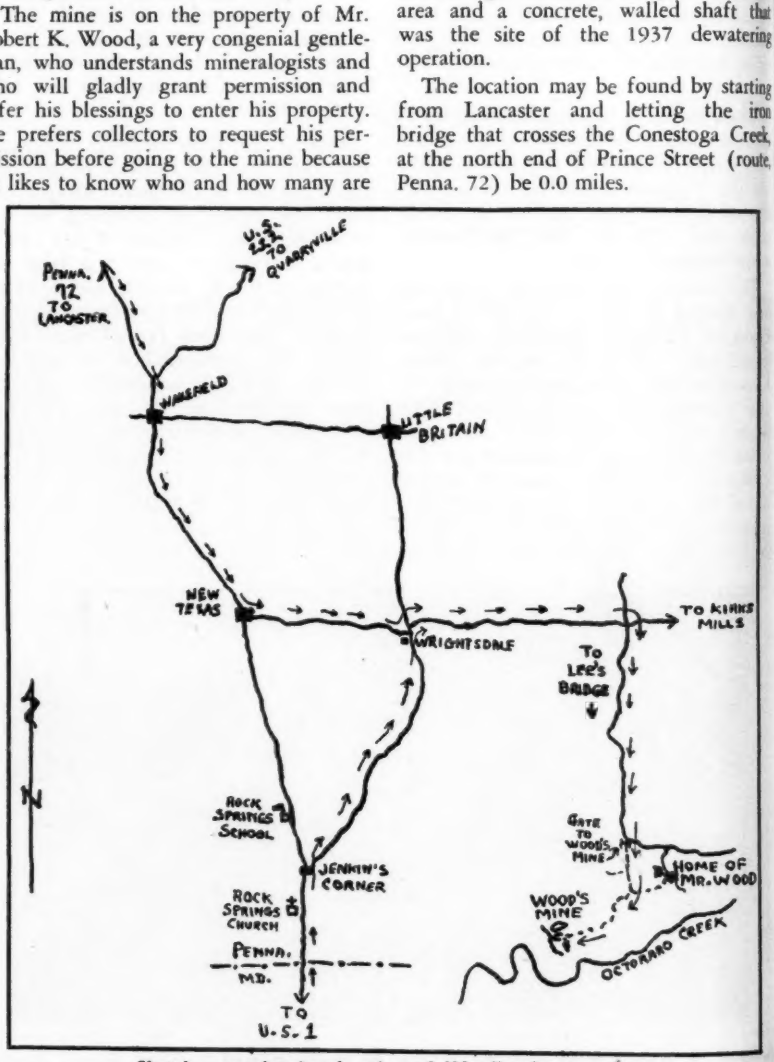
**Location and Description**

The mine lies in a great sweeping oxbow of the Octoraro Creek, in the extreme southern end of Little Britian Township, Lancaster County, and has been, for too many years, misplaced as near Texas, Lancaster County. The correct location would be 2 miles southeast of Wrightsdale, Lancaster County.

The mine is on the property of Mr. Robert K. Wood, a very congenial gentleman, who understands mineralogists and who will gladly grant permission and offer his blessings to enter his property. He prefers collectors to request his permission before going to the mine because he likes to know who and how many are there. And, to respect his position as owner and to execute a seldom practiced ethical obligation of mineralogists, I strongly urge all collectors to seek Mr. Wood's sanction before visiting the mine.

At the present time the mine consists of four dumps, the original water-filled pit and shaft (approximately 720 feet deep) to the right or north as you enter the area and a concrete, walled shaft that was the site of the 1937 dewatering operation.

The location may be found by starting from Lancaster and letting the iron bridge that crosses the Conestoga Creek, at the north end of Prince Street (route, Penna. 72) be 0.0 miles.




**Sketch map showing location of Wood's chrome mine.**

0.0 Engleside Bridge (iron bridge) over Conestoga Creek.

2.7 Mylin's Corners. U. S. Rt. 222 turns left. Keep straight on State Rt. 72.

18.4 State Rt. 72 rejoins U. S. 222 at this point. Follow U. S. 222 straight ahead or south.

20.9 Cross-road. Small village of New Texas. Turn sharp left from Rt. 222 toward Wrightsdale (direction sign). CAUTION!! Road very dangerous to cross.

22.6 "T" road, turn left. Service station on corner to right.

22.7 "Y" road, sharp turn right. SLOW, this road may easily be passed.

23.6 Cross-road. Turn right. Sign post to "Lee's Bridge," take this road. CAUTION!! Road narrow and winding.

25.1 Road curves sharp left. Gate on outside of curve or to the right entrance to mine property. Go through gate on dirt road. (First paved road to the right, around the curve, leads to the home of Mr. Wood. First white house on right.)

25.2 Sideroad to right. Go straight.

25.4 Road curves. Sideroad to left. Keep to right.

25.6 Park car. Approximately the center of Wood's Chrome Mine.

From the south or Pennsylvania-Maryland State Line. Let the Mason and Dixon Monument be 0.0 miles, on U. S. Route 222 and go north.

0.0 State line.

1.2 Jenkin's Corners. Keep right. Turn off 222.

4.1 "Y" road. Turn right (Note 22.7 above and follow caution remarks).

5.0 Crossroad to Lee's Bridge. Turn right.

5.5 Road curves sharp left. Gate on outside of curve or to the right is the entrance to mine property. Go through gate on dirt road (approximately 0.1 mile, continuing on paved road, around curve to right, a paved sideroad will be seen. Take this and stop at first white house on right. Home of Mr. Wood, owner of the mine.)

5.6 Sideroad to right. Straight ahead.

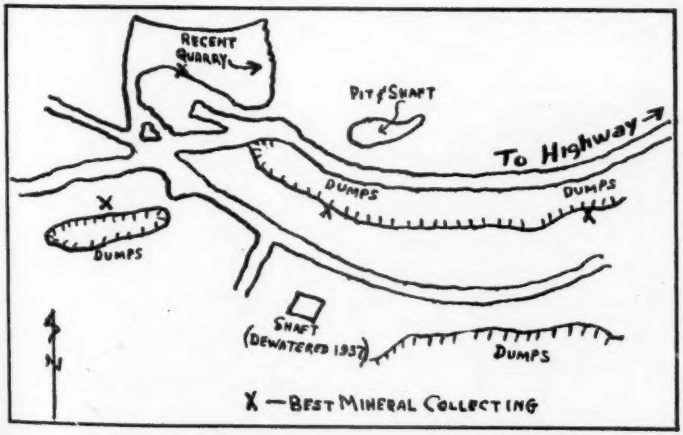
5.8 Road curves. Side road to left. Keep right

6.0 Park car. Center of Wood's Chrome Mine.

All mileage shown is accumulated.

### Geology and Mineralogy

The ore from Wood's Chrome Mine, occurred as massive compact chromite in nodules and pockets in the serpentine gangue. The ore body was almost 300 feet in length and had an average width of 20 feet. The pitch of the ore shoot was from 40° to 60°. The strike was nearly east and west at the outcrop and nearly north and south on lower levels. Contrary to the usual conditions in chromite deposits, the ore occurred in a vein




**Sketch map of Wood's chrome mine.**

**Wood's chrome mine, Sunday, December 3, 1950. View looking northwest.**

along a well-defined footwall. The ore has been reported to have assayed as high as 56.5 percent chromic oxide and to have averaged 48 percent.

The minerals from this famous mine are known throughout the whole civilized world and are to be found in many famous collections. The dumps still afford, with diligent and careful search, many and unusual minerals. Some of the minerals found at the mine are:

ARAGONITE: Occurs in groups of radiating crystals.

BRUCITE: Silver white to delicate pale green foliated masses, resembling mica, in appearance. Very excellent specimens have recently been found on the dumps west of the concrete shaft. This mineral has been partly responsible for the fame of this mine.

CALCITE: Rhombohedra on chromite.

CHROMITE: Black, massive specimens.

CHALCEDONY: Usually light brown and gray.

CHALCOCITE: Associated with the chromite. Rare.

CLINOCHLORE, var. RIPIDOLITE: Pale green crystals, twinned. Found sparingly with kammererite.

DEWEYLITE: Amorphous coating of yellow, green, reddish brown colors. Resembling gum arabic or a light colored resin. Very brittle and often cracked. This mineral is highly fluorescent under all types of lamps.

DOLOMITE: Grayish white globular incrustations.

ENSTATITE var. BRONZITE: As brown, grayish green to olive green, cleavable masses.

GENTHITE: Amorphous, apple-green to yellowish-green incrustations on chromite.

HYDROMAGNESITE: Usually found as chalky-white crusts.

MAGNESITE: As white masses.

MILLERITE: Found rarely with chromite.

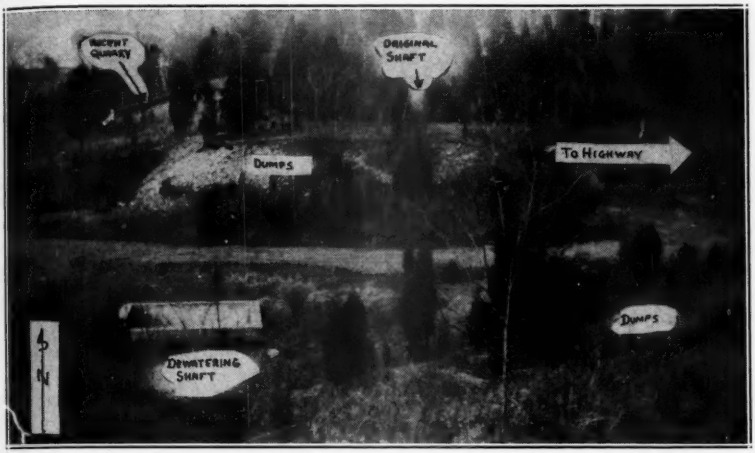
OLIVINE: Has been reported. Needs confirmation.

PENNINITE var. KAMMERERITE: Scaly fibrous aggregates of violet color.

QUARTZ var. DRUSY: Druses of minute crystals, often ferruginous.

QUARTZ var. JASPER: Opaque, dull colored.

SERPENTINE var. MARMOLITE: Light green, thinly foliated.




**Wood's chrome mine, Sunday, December 3, 1950. View looking northeast.**

SERPENTINE var. PICROLITE: Dark grayish to bluish green splintery masses.

SERPENTINE var. WILLIAMSITE: Light green, opaque to translucent, compact and impalpable. Much sought after by the lapidary because of the resemblance to jade.

UVAROVITE: A variety of Garnet: Minute transparent, emerald-green crystals, scattered through pale green, granular clinochlore. Very rare at this location. The true identity of this mineral has recently (see ROCKS AND MINERALS, Sept.-Oct., 1950, World News on Mineral Occurrences, p. 499.) been questioned with the finding of green grossularite at the Line Pit Chrome Mine near Rock Springs, Md. Efforts are now under way to prove or disprove the species of this garnet.

VERMICULITE: Reported. Needs confirmation.

VESUVIANITE: As greenish, brownish and yellowish columnar aggregates.

ZARATITE: Emerald green incrustations on chromite. Often confused with genthite. The zaratite may be distinguished by the vitreous or glass-like luster.

**References**

1. "The Minerals of Lancaster County ", by Herbert H. Beck.
2. "The Mineralogy of Pennsylvania", Samuel G. Gordon, Special Publication of The Academy of Natural Sciences of Philadelphia.
3. "Chromium Chemicals", published by Mutual Chemical Company of America.
4. Bureau of Mines Report of Investigations 4383.
5. "The Geology of Lancaster County", Second Geol. Surv. Penna., Rep. C3.

## NAVY CLOSES NOTED CALIFORNIA AREA

Navy officials have announced that the Mojave desert area of California containing Lead Pipe springs and Blue Chalcedony springs, favorite haunts of rockhounds, have been closed indefinitely to visitors.

The closing is necessitated, according to officials of the nearby U. S. Naval Ordnance Test Station, because of hazards of unexploded ammunition within the area and the presence of classified equipment.

All roads leading into this restricted military reservation from the north, west, and south have been barricaded, and warning signs have been erected.

Announcement will be made when the area can be reopened.

# TRIP UP THE NORTH SHORE OF LAKE SUPERIOR

By FRED G. KNOWLTON
Bayfield, Colorado

A Guidebook to Minnesota Trunk Highway No. 1 (No. 61 now) by G. M. Schwartz. (The University of Minn. Press, Minneapolis, Minn.) covers this area pretty good.

Now that summer is approaching and rockhounds will be out in force, a trip up the north shore of Lake Superior is recommended. This is a very beautiful drive as the highway follows the lake very closely. Plenty of cabins and fine camping grounds. Beautiful waterfalls and a very good road. Good deep sea fishing in the area also.

The trip is started from Duluth, Minn., and mileage is figured from Lake Ave., on U. S. Highway No. 61.

0.00 Lake Avenue on U. S. Highway 61 in Duluth, Minn.

8.1 miles—Duluth Municipal Water Works.

12.2 miles—French River. A few agates have been found on beach at mouth of river. Fish hatchery here.

14.9 miles—Sucker Creek. Park on right side of road at approach to bridge. Take trail to shore and go to end of beach, southwest. This beach has produced nice agates.

16.0 miles—Little Sucker Creek. Some agates but small occur here.

16.4 miles—CCC boys built a look-out on shore here. Very long beach here on which some agates have been found.

16.8 miles—Stony Point. McClean's cabins and gas.

18.0 miles—Knife River. Go to beach and work southwest to end of beach, then continue around rock outcrop to second beach Good agate pickings after storm. Knife Island lies a short distance off shore—a nesting place for sea gulls. So don't try camping near there during nesting season as they squawk all night. I know. Another beach is on the northeast side of the river.

26.1 miles—Two Harbors. Duluth, Mesabi and Iron Range Railroad (D. M. & I. R. R.) hauls iron ore to large docks here. First engine used on railroad is on display at depot. Two beaches here—Burlington Bay and Agate Bay. Amygdaloidal outcrop on south end of Burlington Bay near tourists camp and near power house; also top of cliff beyond ore dock—toward Duluth.

Telephone pole No. 1385. Small agate beach here, owner works on ore dock at Two Harbors.

27.2 miles—Flood Bay. Beach over a mile long and at

28.2 miles—Good agates have been found here. The agates are being washed out of clay banks of lake where they were deposited by glacial drift.

28.7 miles—Steward River.

30.3 miles—Silver Creek. Gravel beach—some agate, also some agate in stream (above bridge). Some amygdaloidal rock west of river. Try east of river for zeolites.

Pole No. 1465, Silver Cliff—xonotlite (with afwillite) is found in veins in this cliff.

31.1 miles—Scenic view here. Encampment Islands in the distance.

32.9 miles — Encampment river — islands at mouth. A large acreage fenced in here—summer homes.

34.2 miles—LaFayette Bluff. Some zeolites but rotten in cliff. Flows of amygdaloidal conglomerate along here.

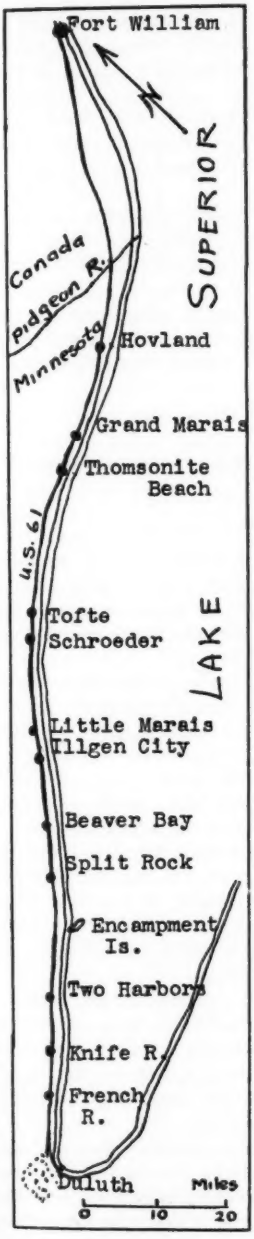
34.6 miles—Crow Creek. Good camp site next to highway. Good agate beach and some agate found in stream.

35.9 miles—Cedar Grove Lodge. No good beaches.

Pole No. 1650—take road to shore—some pale blue agate weathers out of basalt.

37.7 miles—Agate Beach Cabins—some agate.

38.4 miles—Small palisades. Turn in at Tom's Cabins at old Lind Farm. Go northeast on palisades to northeast end where one can get to beach on clay bank then go west to get to cave under cliff—better keep out early in spring or during rainy weather—rock is pretty rotten but




U. S. 61 follows the north shore of Lake Superior for many miles.

very good zeolites occur here.

39.4 miles—Thick amydaloidal bed along shore.

Pole No. 1810. Some native pale blue agate found in rock along shore. I found here a beautiful specimen of apophyllite with calcite and some other crystals (clear as the best of quartz but had four faces on termination). Also go to south end of Gooseberry River—a different type of red agate is found here.

Pole No. 1880—go to shore here. Some amethyst agate in trap rock here.

Pole No. 1890—few agates here.

Pole No. 1915—good gravel beach both east and west of here.

Split Rock Grill.

Pole No. 1992-3—road to beach. Loose gravel on road — don't drive in — good beach—work southwest toward cliff.

43.3 miles—Split Rock River. Agate beach.

45.6 miles—Split Rock Light House. Get your camera! Plenty feldspar here. Near light house there is a plagioclase feldspar crystal in the rock nearly 50 feet long.

Pole No. 2015—road (don't drive in) to shore. Some agate at mouth of stream. Old anorthosite mine—lake boats tied up against palisade and load ground anorthosite—no dock could be maintained in such a place.

46.5 miles—Rusty Point. See mouth of creek just northeast of this point and native agates in Sec. 17-20 and 29 on west side of head waters of this stream.

47.7 miles—Pole No. 2120. Gull Rock —agate beach. Ask permission from fisherman to go to beach.

48.? miles or 1 mile northeast of Gull Rock—to Black Bay. Very coarse magnetic sand at mouth of stream.

48.? miles—French Point. Pole No. 2170—Pine Bay. Pole No. 2190—Inlet Bay. Pole No. 2210—Horn Bay. Hard to get to shore at these points as cliffs are very steep.

51.0 miles—Beaver Bay. Good beach

56.2 miles — Great Palisades. Sets on top of amygdaloidal bed—trail to top.

Pole No. 2487—highway garage. Take road to beach where agates are to be found.

Pole No. 2520—good beach and some agates northeast of Great Palisades

58.2 miles—Baptism River. A beautiful spot. Some agates up stream, in summer when water is low—waterfall 50' high about 1½ miles up stream from road.

59.0 miles—Illgen City—Crystal Bay and Crescent Bay. Much gravel but few agates. Where they got the name of Crystal Bay I do not know. Found no *Crystal* but shore northeast is worth exploring.

60.0 miles approx.—Pole No. 2610. Bellmore Bay. Some agates.

62.5 miles—zeolites on shore.

Pole No. 2690—start of high cliff. Go to shore at next road approximately ½ mile. Two good beaches.

Pole No. 2720—road to shore.

64.6 miles—Don't try to drive this road but walk to beach. A large calcite outcrop and a dark red zeolite (never got it named).

64.6 to 67.6 miles—Good country for zeolites. Go to mouth of Little Marais river—good vug of heulandite and stilbite here.

65.9 miles—Go to beach at Fenstead's cabins.

68.8 miles—Manitou River. Some zeolites here.

Pole No. 2970—Pork Bay. Dandy beaches but few agates.

71.1 miles—Fine camp ground on either side of highway just across bridge. Several beaches but getting out of the agate country. Some zeolites and especially laumontite. A 60 foot waterfall ½ mile up stream from highway.

Bay east of Caribou. Take road to fisherman's about ½ mile from Caribou. Good gravel on beach worth looking over in spring or after big storm.

77.4 miles—Two Island River. A small stream but mostly red rock but some vug rock on shore east of mouth—good trout stream.

79.4 miles — Cross River (Schroeder P. O.). No agates found but fine heulandite in seams—no vug material.

80.7 miles—Temperance River. Some agate at west side of mouth. Good camping ground. Good vug rock. Found good vug material southwest of mouth. Nothing northeast. Found good heulandite.

Pole No. 3550—good beach but no agate.

82.6 miles—Tofte. Road from here to Carlton Peak, 927 feet above Lake Superior (Superior is 602 feet above sea level).

The saddle between the two masses is filled mostly with diabase. Patches of zeolite (pseudo mesolite) was found here.

87.7 miles—Pole No. 3599. Sunny Dale. Scolecite on southwest of cabins.

91.0 miles—Some heulandite but no agate.

91.1 miles—Poplar River. Large barrel holes under highway bridge. Follow shore from here to thomsonite beach where much zeolite is exposed.

96.0 miles—Carribean Point. Basalt flows and zeolites in vugs.

100.2 miles—Cascade State Park. Old CCC camp. Fine camp ground on northeast side of road but no good in July—gnats and no-see-ums will eat one up in short time.

103.2 miles—Thomsonite Beach. Good Harbor Bay. Home of the famous thomsonite (See ROCKS AND MINERALS, Dec., 1939 "Minnesota's Thomsonite Beach," by F. B. Hanley, pp. 371-376). The shore has been taken over by summer homes and not much chance to get any more good thomsonite. Lintonite is also found here and wonderful specimens of laumontite but it will not keep on the shelf. Hedenbergite was found in this locality, about 1 miles NE of Good Harbor Bay.

104.0 miles—Gravel beach. Thomsonite used to be found in this gravel but after the new road was put through the water was so deep in the bay that the wash on the shore could not move gravel to this beach.

There is probably plenty of thomsonite in this area but one would have to do some blasting which isn't good for the thomsonite. Good thomsonite must come from unweathered rock to be good.

110.0 miles—Grand Marais. Plenty of gravel but no agate.

127.0 miles—Arrowhead River. Lots of gravel but no agates.

Pole No. 4600—drive in and take trail to Cows Tongue Point where vug rock is exposed.

130.1 miles—Hovland village. The home of hovlandite, a massive rock used in lapidary work.

137.6 miles—Glomeroporphyry (poor thing) found here but I never met her.

143.0 miles—Mineral Center. Branch road to Grand Portage and boat service to Isle Royal, the home of chlorastrolite, probably the finest zeolite of the bunch.

156.2 miles—Pidgeon River—boundary between United States and Canada.

202.0 miles—Fort William, Ontario, Canada.

206.0 miles—Port Arthur, Ontario, Canada.

274.0 miles—Nipigon Bay and River.

320.0 miles—Rossport, Ontario, Canada. Green agate is found on islands near here. A Mr. Ray Kenney will guide parties. Several types of agates have been found in this area.

332.8 miles—Schreiber—end of the line. At the time I was up there, this was as far as Canadian highway No. 17 went; gravel beaches for miles but no agates.

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## IMPRESSIONS FROM THE MINERAL SHOWS

By ROBERT D. ROOTS

3147 W. 39th Avenue, Denver 11, Colorado

I have been to quite a number of shows and have found that some one thing made the biggest impression of each show. Sometimes there were several things that stood out beyond the meeting with old friends. The quiet competence with which the shows were run. The fine exhibits of good specimens. Some little thing or things that served to round out the show and made it something to remember.

My first show was at Salt Lake City, Utah. I made up my mind to go at 12 o'clock and threw some specimens together and left at 1:30. I had two impressions there, the first that it was a good place to meet people that were interested in the same things you were, and second that it was fun to sell minerals; anyway I have been doing both ever since.

My first big show was at Seattle, Washington. This was one of the most beautiful that I have seen but the big impression it left is—how can one man be so busy! In two 12-hour days I had 30 minutes away from my table. The show at Denver left the impression of being the coziest and most friendly show. At Long Beach, California were the fine exhibits, outstanding of which was the placer gold exhibit by the State of California. The show at Bozeman, Montana, was outstanding in meeting my friends but the big impression was made by a small boy of 8 or 9 years. He had been buying small specimens for a day and a half. Then he bought a nice 25c specimen and said "There now that's all and I'm done." I said "No, not yet, you have been a good customer of mine and I will make you a price of 10c on that" and I handed him back 15c. He let it lay and looked at it for half a minute then he said "No I can't do that" turned and walked away. How can we go wrong with boys like that.

The show at Sacramento, California, had several things to remember. How nice the Society members looked! The ladies in old time dresses and bonnets, the men the same with different types of face adornment outstanding of which were Ralph Dietz's sideburns. The heat under the canvas in the afternoon! The gold panning contest which I was lucky enough to win even if I had not had a gold pan in my hands for over two minutes in the last eight years.

The Four Corners Show at Durango, Colorado, last year. A Society of about 60 members puts on a two day show every year. The outstanding thing here

was the cooking. The kitchen put over the cost of the show. All the members made pies, cakes, chili and so forth. Even Bill Crocket made four pumpkin pies and I was lucky enough to get the last piece.

The show at Milwaukee, Wisc., was a delightful one because I was placed next to Dr. J. D. Willems and soon found he was a fine man. The booth idea I liked very much. It seemed much more friendly than the open table.

The show at Spokane, Washington, had several things. How good the water was; it took me a day and a half to get filled up. I was reminded of the saying that good things come in small packages when I saw the amount of work put out by Paul Brannan.

But my biggest thrill came at a small show in Utah. The Society of Cedar City with a membership I think of 42 decided to put on a two day show. I was returning from Spokane and had my specimens in the car so I took a table at the show. By 10 o'clock I was all set up with specimens out and floodlights fixed. Then I looked around at the exhibits and was most surprised at the fine exhibit that had been set up by the small Society. I was talking to Donna the President of the Society, and learned from her that some children would come in the afternoon. I thought maybe a small school would send up some children and expected 30 or 40 of them. It occurred to me these specimens may not mean much to small kids who know nothing about minerals. So I brought in my carved fluorite figures, a bird, frog on a turtle's back, a large frog, squirrel and four dogs of different colors. Set them in the center of the table and turned two floodlights on them. About 1:30 p.m. in came the kids, each class by itself. They started in an orderly line at the front of the hall and came down the line of exhibits pointing to them and seeing mostly the color and brightness of the specimens. When they came to my table there was something they could understand. Every kid knows about dogs, birds and frogs. The little girls with their heads just above the table edge would point at them and say "Oooo." Then the same questions over and over again. Are they rock? Did you make them? Do you sell them? Then I would point to a piece of fluorite and say they were made by an old gentleman way back in Illinois. One of the boys favorite question was about a piece of pyrite. Is this fool's gold? All of these children were small, none over fourth grade size and some could hardly see over the edge of the table. Before the afternoon was over more than 800 children had passed by the exhibits. They were very well behaved and only when they got excited would they touch anything. And the light in their eyes might remind us that maybe we have seen too many specimens and lost a little of the feeling that we used to have for our specimens. At that I believe the teachers enjoyed it almost as much as the children. I still have the same feeling that I had at Salt Lake City years ago that the Mineral Socieies are made up of some of the nicest people in America. Only to that I have added this—that the American boys and girls are the finest in the world.

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**Pleasure by the Inch!**

Editor R & M:

I am a rock collector and enjoy every inch of your magazine.

Mrs. Ashley Ferrier
Mason City, Iowa

March 22, 1951

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**A Real Magazine!**

Editor R & M:

ROCKS AND MINERALS is most fortunate in having an Editor that puts out a real magazine that we can all enjoy and be real proud of!

Dr. W. J. Shacklette
Hodgenville, Ky.

March 10, 1951

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**A Constant Companion!**

Editor R & M:

I find R & M a very constant companion and very much interesting material therein. Also I have used it as a medium for becoming acquainted with many interesting localities and some very fascinating people.

Ivan Sackman
St. Cloud, Minn.

March 6, 1951

# PETRIFIED WOOD IN OHIO

By ROBERT H. MITCHELL
Muskingum College, New Concord, Ohio

While petrified wood has been found locally throughout the Coal Formations in many places in southeastern Ohio it cannot be said to be abundant. Little mention of petrified wood is made in the geologic literature of the state and very few specimens have been reported in place. Most of the material is found as pieces, logs or stumps in stream beds or on hill sides.

An Indian legend that a Goddess disappointed at finding only wet logs when she wished to cook a meal, turned the logs to stone explains the petrified wood of Arizona. However, this explanation of petrified wood is hardly accurate or scientific. Sub-surface waters, containing dissolved mineral matter, coming in contact with buried organic matter such as a log, may remove the organic matter and at the same time deposit the mineral matter in place of the organic material. Such a process is known as petrification, and the log is said to have been petrified. When ground-water containing silica in solution comes in contact with the vegetable acids produced by the decay of the log, silica is deposited and the log has been petrified by silicification. In such cases the product is known as silicified wood. The term petrified wood designates only that the wood has been replaced by minerals. Silicified wood indicates that silica was the replacing material. In calcified wood the replacing mineral is calcite. All of the petrified wood of Ohio should be classed as silicified wood.

Silicified wood has been found in a number of places in Ohio. It is known to exist in eastern Lawrence, eastern Gallia, Jackson, western Meigs, southern Athens, northern Monroe, Muskingum, western Guernsey and eastern Belmont Counties. (see Map). In spite of this fact I could find only two references to petrified wood in the Ohio literature, both in the same report.

Condit in Bulletin 17, Fourth Series, of the Ohio Geological Survey states, "Near the head of Middle Branch of Shade River, in section 1, Athens Township, (Athens County) many specimens of silicified wood were seen in the bed of the creek, and many fine museum specimens have been taken from this locality. No blocks were seen in place in the hills, but it is probable that they have been weathered out from shales lying a little higher than the Pittsburgh coal." Again he states, "Specimens of silicified wood are common in the hills of this region (southwestern Morgan County) but none were seen in place. Loose blocks were found well up in the hills, and it is probable that they have weathered from shales lying a little above the Ames Limestone."

Wilbur Stout, retired State Geologist of Ohio, in a personal letter states, "Apparently it is most abundant in the 'Big Red'—soft red shales in the upper part of the Conemaugh Series in western Meigs, eastern Gallia and eastern Lawrence Counties."

The material is rather abundant along some of the streams and is represented by chunks and fragments of dense, colored material none of which is as highly colored as the silicified woods found in the western states.

Southwest of New Concord, in Muskingum County, chunks have been found on the hillside associated with red clays above the horizon of the Ames limestone. One specimen is of particular interest because of its resemblance to a piece of decayed fence rail. In Guernsey County, just east of New Concord, numerous small chunks have been observed in the bed of a tributary of North Crooked Creek. These specimens are below the Cambridge limestone but are not in place.

Stumps and logs up to 2½ feet in length are found along Sunfish Creek and its tributaries in northern Monroe County and along Captina Creek and its tributaries in southeastern Belmont County. It is quite probable that this material

came from the upper part of the Conemaugh or the basal portion of the Monongahela Series. Mr. A. R. Kelsey, deceased, of near Jacobsburg in Belmont County, had a fine collection of stumps and sections of logs ranging from a few inches to 2½ feet in length in his front yard. In a letter he stated, "I find them (stumps and logs) south on the tributaries of Captina Creek. There are none north, east or west to my knowledge."

Mr. Stout mentions the fact that silicified wood is not uncommon near Beallsville in Monroe County where a resident has a few stumps as ornaments in his yard. He also reports, "During my years in the field I saw petrified wood in place at three places:

a) Below the Lower Mercer limestone in a stream bed west of the Muskingum River west of Rock Cut, Muskingum County.

b) On the horizon of the Bolivar clay in eastern Milton Township, Jackson County. Here the piece was uncovered by workmen grading a road.

c) In the 'Big Red' shales in the upper part of the Conemaugh Series northeast of Vinton in Gallia County."

The wood found in the Pottsville and Allegheny series varies in color from almost white to almost black. The black color of some specimens is probably due to finely disseminated carbon particles.

**OHIO**

**Shaded areas indicate counties in which silicified wood is found.**

The cell structure of this material is usually well preserved. The wood from the Conemaugh and Monongahela is usually more compact, heavy and usually brown to reddish brown in color. In some cases the wood texture is plainly evident while in other specimens the marking of the bark only is visible.

The fact that the wood is seldom found in place has led some to suggest that it is more recent in origin than the Pennsylvania rocks with which it is associated. Considerable work must be done on this material in order to determine the nature of the original plants and to determine where it belongs geologically.

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## THE IMPORTANCE OF MINERALS IN LIFE

By A. J. DELARIO, M.D.
316 Broadway, Paterson, N. J.

Minerals are very important in all phases of life. They are needed for all functions of plant and animal cells. Minerals were very important in the origin of life.

Practically all the elements exist in the living organism. These elements and many minerals that contain these elements, exist in a certain definite percentage. This percentage varies but little. When this percentage or normal range is exceeded or decreased, then abnormal function or physiology occurs. If the difference is great enough, death of the cell ensues.

Every cell, whether it be plant or animal, whether it be a single cell or one of billions in any organism, has the same elements and minerals and in the same normal range. This has existed since the beginning of life and is the same as exists in sea water today.

It seems that the elements or their minerals, which exist in sea water, are not only important in maintaining normal functioning and life, but very instrumental in the origin of life itself. When that right proportion of colloidal protoplasm consisting of carbon, hydrogen, oxygen and nitrogen, which we call carbohydrate, fat and protein, occurred in the sea water, then the various physical and chemical reactions of life took place.

Without the water and minerals as contained in the sea, the physical life properties of osmosis, surface tension, ionization, electrical charges, cellular division, and etc., could not take place. The chemical life reactions in which enzymes break down and others build up carbohydrates, fats and proteins, could not occur. Thus the processes of oxidation, reduction, digestion, etc., would not have taken place.

I am not saying why life took place in this way and why it was created, but rather how it occurred. The why and wherefore of life is explained religiously; the how scientifically.

With changes in environmental conditions and evolution, the cells might become more complex or be part of a team, as for instance in a plant or animal organism, but even so, each cell in the more complex situation could not live, unless it were possible for its fluid contents to contain the same minerals as were contained in its original place of birth, the sea.

Since everything man eats has the chemical constituents similar to those of the sea, it is not difficult for him to replenish these minerals. But if too much or too little of these minerals are partaken, the gastro-intestinal tract and the kidneys tend to maintain a normal equilibrium. Lower animals, when the supply of food minerals becomes too little, make long treks to salt licks or to the sea to take up their fill of sea minerals.

From this brief article one can see that the hobby of mineralogy can have many and deep ramifications. A rock specimen no longer is just a mere show piece, but it has a long and wonderful life history, if it only could make it known to us. It has a present and its future may be associated with almost every human undertaking. But most important and spectacular of all is its part in the origin and maintenance of life.

# "MORE ABOUT THE BUCKSHOT"

By ALVIN W. KAMP

231 Elmwood Blvd., Jackson, Missouri

I have always been a lover of barite, but little did I realize that after reading the September, 1946 issue of R & M the faithful old Chevy and myself would grind out approximately 5,000 miles just to add another specimen of barite from another locality. I refer to the article by Albert L. Kidwell, "The Buckshot Barite Mine of Central Missouri." To those of you who wonder why all this mileage was necessary, I shall start at the beginning with the article by Mr. Kidwell.

It was stated that the clear, colorless, sub-transparent barite in groups and single terminated crystals were to be found in the Buckshot Mine. Since this mine was located in Morgon County, my road map told me that the mileage was about 500 miles round trip. The only indication as to just where the mine might be located was a portion of a sentence, "About four miles northwest of Gravois Mills." So with the first available week-end, accompanied by the Mrs., we set out to capture the Buckshot. After arriving at Gravois Mills we found that due to the heavy Spring rains, practically all the country roads that left the main highway in this section were washed out and impassable. Well, we had driven 250 miles to get barite and we were determined to get some specimens even if it required walking 4 miles on a muddy road with a return trip of 4 miles. A check of our road map showed a farm-to-market road about 15 miles directly West of our location, but to get to this point required an additional drive of perhaps 50 miles. This we did, but to our consternation found that our troubles had only begun We knew we were within 5 miles of the mine and our only recourse was to inquire from the natives. Our first inquiry yielded no information whatsoever. The second stop was a little more encouraging: "Yes", they had heard of the Buckshot Mine, "No", they had no idea just where it was located. The third inquiry resulted in a deluge of questions as to what we wanted at the mine, how we had heard about it, where we were from, why anyone was so silly as to collect rocks, etc, etc. This farmer did state that the next house down the road could probably tell me about the Buckshot Mine and it was only a mile further on. (our speedometer checked exactly 3 miles). The last inquiry told us that we were now almost at the end of our journey. This fellow pointed out across a valley in the general direction and said it was impossible to drive much further. We thanked our guide and drove on for about a half mile, parked the Chevy in a side ditch and took out across a field. After about a mile walk we decided that somehow we had missed our objective. We retraced part of our steps and crossed hills and valleys. So hidden by the wilderness was the mine that we almost fell into it before we could stop. Now here it was, a huge circular pit 80 feet wide, 135 feet long and about 35 feet deep. It was quite a surprise as it wasn't at all what we had expected to find. The sides were badly eroded, trees, brush and debris had fallen into the pit and about two feet of water covered the bottom. To make matters worse, we had scared and been scared by perhaps a dozen snakes and I assure you I am extremely allergic to reptiles. Now as the sun was setting behind the hills, our time had run out so we decided to head back for the car, lest darkness overtake us and get lost.

Now that we were home again we had a mixed feeling of joy and also of being let down. We had consumed three days, driven over 500 miles and not a single specimen, still, we had found the location and that was some consolation. Plans were immediately made for another trip and this time we hoped to hit the jack-pot.

Just one month later we again started out for the invasion of the Buckshot. This time perhaps half of the water had left the pit but still we made our way

General view of the Buckshot Mine. Author's wife standing on the island where the large single crystal was found.

from place to place with great difficulty. Our first attention was directed to the many single crystals that had eroded from the banks and we immediately began to select and cull them on the spot. The good ones were wrapped separately and the bad ones thrown back down. Some groups of the crystals had eroded too and fallen near the waters edge, but we found the finest specimens by digging into the tallow clay which settled in the semi-circular solution vugs. No effort was

made to clean the specimens on location and later we found it would have been useless to have attempted it there. After several hours of collecting our backs began to register resentment for stooping over too much. I noticed a small island in the very middle of the pit and decided I could rest there and at the same time have a good view point to scrutinize the whole mine. It was here that my eyes began to roam to the crystals and broken fragments around my feet. I noticed what appeared to be a large broken fragment sticking partially out of the ground. I paid no further attention to it until I was about ready to leave the island and hunt more specimens. I casually gave it a bump with my shoe and noticed it was very secure. I then dug some of the dirt from around it with my prospectors pick and out came the largest terminated barite crystal I had ever seen. It was 1½ inches thick, 3½ inches wide, 6 inches long and weighed 3½ lbs. It then came to my attention that something I had suspected for a long time, namely: that half of the finest specimens are found by accident rather than by diligent search. It was this same day that I found a doubly-terminated calcite crystal in much the same way, namely: thinking what I saw was only a broken fragment until further excavation was made. Returning home we had one phase left and that was to clean the specimens. This I found to be quite a task until by accident I stumbled on a simple method.

I first tried to remove the tallow clay by soaking in water and then using a brush and soap. No amount of brushing and washing would remove the tallow clay. It stuck to the specimens just as tallow would. I then placed the specimens out in the sun for about two days until the clay was quite dry and started to crack. Much of it could then be removed with a toothpick and what was left was removed with a high pressure jet of water. An iron oxide stain was still present and this was removed by placing the specimens in a solution of Oxalic Acid for several days.

Now we had truly lovely specimens and this is a brief description: The crystals were clear, colorless, sub-transparent to translucent, tabular with single terminations. In most cases the surface had a high luster. The groups or clusters were attached to massive barite, locally called "ball tiff." In Mr. Kidwell's article he states that no perfect doubly-terminated crystals were found. After examining hundreds of single crystals, we have three that fall into the classification of "perfect doubly-terminated." They range in size from one-half inch to an inch and a half.

Now that the "Buckshot Bug" had bitten us, we decided that more collecting trips should be made in order to find even better specimens. This we did, and everytime we found a finer specimen, one of the previously collected specimens went into the "duplicate" display case. Two years of collecting at this mine has resulted in ten trips being made. As a result, the writer now has approximately 300 single crystals and about 100 lbs. of the xl groups all labeled as duplicates. The writer has always been of the opinion that a good collector should not and will not completely strip a collecting area bare. One should only take enough for their own needs and leave some for the next collector. It is true that specimens on the surface are not nearly as plentiful now as they were before we made our first trip. Fine specimens are now found only by digging and diligent search. The walls of the mine have eroded badly and debris of all types has fallen into it making collecting very difficult. Consequently, we have decided to share the duplicate specimens with any rockhound who can't do his own collecting at the "Buckshot." Should any collector want any of this material, all he need do is write and state his desires. Furthermore, the writer would appreciate hearing from anyone that has also found a very large barite xl in order to find out just about how large they come.

Several people have requested written instructions for finding this barite mine. This is practically impossible since dozens of roads and ruts have to be traversed and unless one is familiar with the rugged terrain, you would end up totally lost and without success. The writer is perfectly

A well individualized barite xl on smaller xls and massive barite.

willing to act as a personal guide to any collecting party if arrangements are made in advance of the departure date.

An entire vacation can be spent in this gerteral locality as hunting and fishing is very good. The Lake of the Ozarks, formed by the impounding of the Osage River, constitutes approximately three-fourths of the southern boundry of Morgon County, and the nearest arm of the lake is not over 6 miles distant. What more could be asked by an outdoorsman than to hunt, fish and collect minerals.

In closing, thanks to Mr. Kidwell and to R & M that I was able to get another specimen of barite from another locality.

# YOUR INTERESTS

By JAMES A. TAYLOR

38 Douglas Road, Glen Ridge, N. J.

I do not like the meaningless and silly name "hobbies." Let us call what we like to do our "interests," that is, the things that interest us. The suggestion in the word hobbies is that of rather fanatical one-sidedness on one subject. Incidentally the name "rock hound" annoys me. I have a serious interest in collecting minerals but I do not run around sniffing rocks. I am not a hound.

Anything that really interest us is worth cultivating to the point where we can talk intelligently about it, even tho not as an authority. Show me the person who can talk entertainingly about even one subject which he or she knows and you have an interesting person. But the one who has the capacity of interest in one subject will unavoidably know many because he has curiosity. This capacity can be cultivated and enlarged and the more we know the more interesting we find any subject and all the things around us. You do not find the person of this type playing canasta every evening to "kill time" or ruining his eyes on a television screen. The pretense that one's job or business leaves no time for the pursuit of special knowledge is not valid. J. P. Morgan became an authority on objects of art. Roebling, the builder of Brooklyn Bridge, had the finest private mineral collection in the world. William Boyce Thompson, the copper magnate, also had a marvelous collection and was the creator of the Yonkers arboretum. The late King of England had the greatest collection of stamps in the world. In every case the pursuit of business merely emphasizes the necessity for relaxation and diversion and makes this interest very worth while. While these men had much money to collect valuable things, this is not at all necessary. I have a mineral collection that has little money value but I found most of the items and they have immense value to me.

The very least a man can do, if he is not a collector by instinct, is to know better than his neighbors the history of his own locality. He will find digging up his facts (also artifacts) of the people before him a fascinating pursuit. His neighbors and friends will be eager to hear him talk. It is so with almost any subject except his symptoms and his last operation. When you get that far you are an introvert and do not belong in this world.

If you are in the country, do you know all the trees, birds, flowers, clouds, the rocks, the history of pork and horses from Genghis Khan up and down? Do you ever look through an encyclopedia for things of interest? Well you have probably missed a lot of things. Your interests are different from other people's, provided you have any. If you have none, I am awfully sorry for you for this world is a dreary place without any. If you are retired, things of this sort are an imperative necessity for when the mind is vacant life means little.

My own special interest in minerals has grown steadily. Did you ever stop to think that the air and the sea and your own bodies are made from the minerals in the rocks? The earth was once molten and then solid rock and hence whatever is here can only be from those rocks. The source of life is another matter. These mineral forms are exceedingly beautiful and the possession of them a joy and a delight.

The novice will be amazed to find how many interesting forms are in the rocks all around him. Pick them up, buy "Rocks and Minerals" to get the "feel" of the collector, and an elementary book and you have added to your life something that may make your every day more interesting.

# FROBISHER'S FALSE EL DORADO

By JOEL MARTIN HALPERN

There have been many bogus gold rushes in the history of mining, but one of the most bizarre occurred in the middle of the 16th century. It all started with a few pieces of amphibole, and before it was over this fantastic fiasco had involved the Queen of England, $3,000,000 and some of the most prominent businessmen in England. In order to understand the various events which led up to the "discovery," it is necessary to know something about the history of this period.

Columbus' discovery was followed by several other voyages of exploration in the latter part of the 15th century. These voyages led, in turn, to numerous others, most of them being made by individuals in search of riches in the Americas or in pursuit of a shorter route to Asia. As the 16th century progressed and the Spanish Empire began to expand rapidly, the British intensified their search for a Northwest Passage. They hoped the discovery of this shorter route to the Orient would increase their power and enable them to compete with Spain on a more equal basis.

One of the most daring Elizabethan navigators who sought to realize this aim was Martin Frobisher. He was born in 1539 and early in his life chose the career of the sea. In 1576, being deprived of his usual occupation of piracy by Queen Elizabeth's friendly gestures to the Spanish, he decided to undertake a voyage in search of the Northwest Passage.

After receiving the necessary backing of some London Merchants, he set sail on June 7, 1576, with two large ships and a smaller one, his own being manned by a crew of thirty-five. The small ship sank, and one large ship deserted, but Frobisher refused to be discouraged and went on alone. Finally, after an arduous voyage, he sailed into the bay, in the southeast part of Baffin Island (in the Canadian Arctic Archipelago), that now bears his name; he believed it to be part of a strait leading to Asia.

On his return to London the investors, eager to make a profit out of the voyage, "discovered" that one of the stones collected by a member of the crew was gold ore. They were so convinced that even after three different London goldsmiths found it to be worthless, they found a fourth who declared, after "due tests" that this was indeed gold ore. A new stock company called the Cathay Company was hastily organized, with the Queen subscribing to one-fourth of the stock. Another better-equipped expedition was sent out to seek more of this "gold ore." The remains of these frantic diggings of the fortune-seekers are still visible today in the hillsides of the islands around Frobisher Bay.

Upon their return to England a chosen group of "experts" was designated by the Court to ascertain the exact composition of the ore. They found the ore to be very rich and well worth $200 a ton, in terms of our present currency. This precious ore was then taken to the dungeons of Bristol Castle where it was secured from theft by four great locks! The reputation of the Cathay Company rose greatly. More money was raised, and the following season a large fleet departed and brought back 1300 tons of the worthless stuff. By this time the true nature of the ore had been discovered, and it was jettisoned along the quay. Recently specimens both of the "ore" dumped in England and from the piles of rocks left by Frobisher and his men in the vicinity of Baffin Bay have been obtained. The results of an analysis of these rocks has proven rather interesting.

One of the rocks turned out to be amphibolite (consisting mainly of amphibole and pyroxene). Upon microscopic examination calcite, sodic plagioclase, biotite, magnetite, ilmentite, titanite, quartz, apatite, garnet and zircon were found in small quantities. Another specimen has been identified as pyroxenite, containing a large amount of augite and some hornblende as well as other minerals. The specimen is sprinkled with

biotite, which gives it a sparkling surface. No pyrite has been found although it may be present in small quantities. The bronzy lustered mica and not the pyrite was probably the basis for the "discovery of gold."

Thus ended one of the most colossal farces in the history of Great Britain. This little tale should surely provide some comfort for anyone who has ever identified a piece of worthless pyrite as gold or who has sought in vain for hidden riches.

**Acknowledgment**

I am indebted to Sharat K. Roy's "History and Petrography of Frobisher's 'Gold Ore'", Vol. 7, No. 2 (May 26, 1937), in the GEOLOGICAL SERIES OF THE FIELD MUSEUM OF NATURAL HISTORY, of which this article is chiefly a summary. The interested reader is referred to it for more detailed information.

# NUGGETS IN OLD DUMPS

By JOHN S. ALBANESE
P.O. Box 536, Newark 1, N. J.

When a collector visits the dump of, let's say, an old abandoned tourmaline quarry, the chances are he will be looking for fine crystals of tourmaline and nothing else. The same goes for any kind of a dump. Most collectors will look for fine showy specimens, and overlook ordinary mineral specimens which make up the most important part of a scientific collection. Specimens of scientific value are generally disregarded.

The wise collector, before starting on a trip to an old abandoned mine or quarry, should first obtain from old literature a list of known minerals found at that particular deposit when it was active. A good example is the old tourmaline quarry at Haddam, Conn. Three or four generations of collectors have visited this quarry, and gone over it with a fine-tooth comb—for tourmaline crystals, and practically nothing else.

Dana's System of Mineralogy, Fourth edition, 1854, lists the following minerals found at Haddam, Connecticut: Chrysoberyl, Beryl, Epidote, Tourmaline, Feldspar, Anthophyllite, Garnet, Iolite, Oligoclase, Chlorophyllite, Automolite, Magnetic Iron, Adularia, Apatite, Columbite, Zircon (Calyptolite), Mica, White and Yellow Pyrites, Molybdenite, Allanite, Bismuth, Bismuth Ochre.

How many present day collectors take such lists along when visiting old or ancient deposits? Sometimes, an exceptionally rare find is dug up at an old dump, as happened recently in England. A good friend of mine living in North Wales, Great Britain, sent me a specimen of Duftite with the following information:

"A friend has just come across specimens of Bayldonite and Duftite in the old burrows at Brandy Gill, Carrock Fells, Cumberland. It is remarkable that no one has found these previously, as the burrows are very old, and must have been visited by many mineralogists. Probably they were overlooked, being taken for malachite and disregarded. The mine was worked so long ago that no record of it remains. The mine is near the head of a steep little gill, with no road, or even track. There must have been a track—probably only a pony track—leading to it once, but centuries of weather have completely obliterated it.

"The small dump has been thoroughly dug over, and yielded about 30 specimens of duftite of varying quality. It is the only occurrence of the mineral in England, and I think it has rarely been met with elsewhere. Their identity was established by X-ray examination at the British Museum."

How many of us have passed up rarities like Duftite at old dumps? I would suggest that when large groups of collectors visit abandoned quarries they should hire a bulldozer to turn over the rock pile. The cost would be about two or three dollars per person, and well worth it. Even if no rare specimens are found, a lot of fun can be had by all.

Editor's Note: See the reference to England under "World News on Mineral Occurrences," in this issue, for the list of rare minerals recently found at the Brandy Gill mine.

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656 South Hendricks Avenue, Los Angeles 22, Calif.

Of the 112 known minerals recorded from Crestmore, Calif., at least half can still be collected at the Commercial Quarry. Southern California collectors seeking hours of enjoyment, and a representation of intriguing Crestmore minerals, should see to it that they visit the quarry.

With the kind permission of the Riverside Cement Company, several amateur mineralogists, including Al Gaither and the author, studied and collected the various minerals abounding in the Quarry. Up to this writing our list comprises over 50 determined minerals, many rare, and many beautiful enough to enhance any case or cabinet.

Some of the "finds" would have not been possible, but for the aptitude of one Al Gaither, a young fellow new to collecting. Al nimbly climbed all parts of the quarry, found all the rarities, dug up all the showy pieces; for when a likely spot was found, tirelessly Al mined until all members of the trip were supplied with specimens that bring mineralogical delight.

Perhaps the most striking and most unusual specimens discovered by Al Gaither, came from a deposit of white to blue and gray Calcite and yellowish Diopside. In this mass several finely crystallized minerals came to light. The rarest were the Xanthophyllites. Crystals in color from dark green to light green to almost colorless, that measured up to 1½ inches in diameter. Associated with the Xanthophyllite, were perfect xls of golden Sphene, black Magnetite xls in size to ¾ of an inch, Diopside xls, Chlorite xls and white Laumontite xls. Here Al uncovered two perfect black Melanite Garnets. Dendrites of Pyrolusite were collected in the massive diopside.

In another part of the quarry, other Xanthophyllites were taken, a different green in color, the xls imbedded in massive Idocrase and associated with blue Calcite, Pyrrhotite, Galena, Pyrite, Riversideite (a one-locality mineral), Custerite, Orthoclase xls and dark green Idocrase xls.

Pure rhombohedral cleavages of blue, gray or white Calcite are common. The Calcite rhombs, not so pure, are the ones the collector should examine thoroughly. Idocrase xls, measuring up to 2 inches, in groups and singly, make desirable specimens, especially when dotting blue Calcite.

Yellow Wilkieite (the only mineral which can boast of having four acid radicals, and which can only be taken at Crestmore), can be found in Calcite along with green Idocrase xls, white Crestmoreite (another one-locality mineral) and Diopside grains.

Another interesting mineral, Monticellite, in grains of gray color, are found with tiny Magnetite xls in gray rhombic Calcite. Crystals of dark green Spinel variety Ceylonite and pale yellow Monticellite are similiarly found.

Very rare in the blue Calcite, are the Serpentine xls pseudomorph after Clinohumite and not only would this be rare enough, white Crestmoreite is generously distributed throughout these pieces.

Other minerals found in rhombic Calcite are: Chalcopyrite with gray Monticellite; Graphite flakes with green Idocrase and gray to black Monticellite· yellow Chondrodite; yellow to brown Humite with Magnetite xls; Limonite cavities; and Brucite grains.

The aforementioned minerals are disseminated throughout the rhombs of Calcite, the rhombs are for the most part unattached to other minerals, however all three colors of rhombs are found with other massive minerals forming their matrix.

Many interesting and rare minerals are found in the massive Calcite, i.e., Calcite that is not in large rhombic cleavages. Dark brown Monticellite, yellow Idocrase and white Crestmoreite can be found together in blue and white Calcite; green

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Idocrase and light brown Monticellite occur in blue Calcite; light gray Spurrite, green and brown Idocrase, gray Monticellite, white Crestmoreite and white seams of Thaumasite make attractive and desirable specimens in blue Calcite; yellow Gehlenite, yellow Idocrase and black Magnetite xls are grouped together in gray Calcite; tiny brown Garnets (? var.) can be taken in white Calcite; light gray to dark gray Gehlenite, brown Idocrase, white Thaumasite, blue-gray Spurrite, white Crestmoreite and yellow Monticellite brighten up blue Calcite.

Other species of interest to collectors that can readily be found are: pale brown Humite, yellow Idocrase, white Crestmoreite and black Magnetite xls dotting the blue Calcite while every ½ inch or so a narrow seam of white Calcite adds that touch of distinction to the specimen; white and brown Wollastonite xls are taken in Calcite, both white and blue, associated with green Diopside and white Orthoclase; Scapolite, in gray and white can be discovered with yellow Brucite and green Grossularite in blue Calcite; and lucky were we, to find Manganocalcite, a variety of Calcite, black in color, which is rarely found in the white Calcite.

Unusual were some of the pieces collected when viewed under the fluorescent light. Iron-stained Calcite that have coatings of Hyalite were brilliant when seen under the spell of the ultra-violet. Botryoidal Aragonite along with Common Opal, Hyalite and Travertine, not only showed good fluorescence, but also very high phosphorescence.

We found Common Opal that did not fluoresce, in colors of black, brown and gray, colored by impurities of manganese oxide, iron and aluminum.

Near the Xanthophyllite deposit, we took many specimens of Mineral F, new to science and never yet named. Mineral F is a bright blue in color and occurs as seams in Quartz Monzonite.

Tiny Epidote xls, with Wollastonite xls, were found in a Microcline-Calcite matrix.

Calcite nodules, many of them geodes containing very small xls, and stained dark by iron, were found in a clay-like bank near one end of the quarry.

Another attractive group of specimens taken were very dark green Idocrase matrix rich with blue Calcite rhombs, green Diopside, white Wollastonite, fibrous and radiating Aragonite and green Idocrase xls.

Other colors of mentioned minerals and other minerals, not mentioned, found at Crestmore were: gray and pink Wollastonite xls; white, granular Wollastonite; colorless to snowy-white Calcite xls; pure white Magnesite nodules; dark green Spinel xls from talus; brown massive Andradite and pale green to yellow Grossularite; Tremolite; Albite containing white, gray, black and brown Wollastonite xls; Biotite and Quartz; Muscovite; Apophyllite xls; Plagioclase; and Allanite xls.

This makes over 50 different minerals. Can you beat this?

**Bibliography**

Woodford, A. O.—Crestmore Minerals. Calif. Jour. Mines & Geol. Vol. 39 No. 3, pp. 333-365. July 1943.

Murdoch, J. & Webb, R. W.—Minerals of California. Calif. Div. of Mines Bull. 136. June 1948.

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**Sample Copy Thrills Beginner!**

Editor R & M:

I am positively thrilled with the sample copy of R & M you sent me. It is indeed worth the price per copy, so, I think, it's best that I order a year's subscription.

I am just a mere beginner and have sent for a few dozen specimens from one of your advertisers, Plummer's of San Diego, Calif.

Francis J. Litz
Rochester, N. Y.

April 20, 1951

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**His 20th Renewal!**

Editor R & M:

Enclosed please find $3.00 for renewal of ROCKS AND MINERALS. After all my years of collecting, I am just as interested as ever.

Vincent Giordano
West Orange, N. J.

April 22, 1951

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**If It Runs It Isn't Ore!**

Out in Nevada and other places, too, they prospect at night for scheelite. In Nevada, however, there is a centipede which fluoresces the same color as scheelite so the boys poke the bright spot with a stick and if it runs they know it isn't ore.

Dr. C. N. Eddy

# WORLD NEWS ON MINERAL OCCURRENCES

**Items on new finds wanted. Please send them in.**

**Abbreviations:** xl—crystal xled—crystallized xline—crystalline

ALABAMA: Near Vance, in Tuscaloose Co., Ala., many beautiful specimens of agate and chalcedony are found as loose pebbles along with chert. Some of the chert have large cavities that are lined with quartz crystals.

ARIZONA: David P. Record, of the Mission Curio Mart, 4400 Mission Rd., Rt. 3, Box 384, Tucson, Ariz., sends in the following contribution:

"I am sending you some azurite geodes from the Pinal Mountains about 90 miles north of Tucson. These have been split in half to show the crystal centers, some of which are all fine azurite crystals, while others show in addition to the azurite, crystals of malachite, brochantite, and calcite. These make beautiful small cabinet specimens, or thumbnail mounts."

Three one inch azurite geodes were received and they were beautiful. One was lined with lustrous azure-blue drusy azurite; another lined with lustrous drusy azurite and a mesh of minutely thin needles of green malachite; the third was lined with greenish xline brochantite and tiny whitish calcite crystals.

ARKANSAS: A very nice brownish stalactite (calcite) from the Club House Cave, Ark., was recently donated to R & M by John S. Albanese, P. O. Box 536, Newark 1, N. J.

This is a new locality to us. Can any reader furnish the location of this cave?

CALIFORNIA: Gunnar Bjareby, 147 Worthington St., Boston 15, Mass., sends in the following note on a new locality for ludlamite:

"Below is a note which may be of special interest to mineral collectors in California. On a specimen received from Mr. D. Burgess of Manhattan Beach, Calif., I noticed a tabular greenish mineral with pearly luster. It turned out to be ludlamite. It came from the Pedro Mine in Pala, Calif. Since it is a rather rare species the new locality should be recorded."

Pala is in northwestern San Diego County of Southern California.

COLORADO: Prof. Richard M. Pearl, Colorado College, Colorado Springs, Colo., sent R & M two interesting specimens. One was a nice loose one inch grayish orthoclase crystal from the Howard Dike, Willow Creek, Grand Co., Colo., and the other was a smoky quartz from Deertrail, Arapahoe Co., Colo.

CONNECTICUT: Vivianite, as a bluish streak on massive essonite, was found recently at the essonite (garnet) locality, Redding Station, Fairfield Co., Conn.

DELAWARE: A nice specimen of cellular limonite (brown and yellow-brown in color) was sent R & M by O. A. Pickett, 108 Briar Lane, Newark, Del. The specimen came from Iron Hill, New Castle Co., Del. Writes Mr. Pickett:

"Iron Hill and Mine Hill are one and the same with Iron Hill being the proper name. The U. S. Geological Folio, Elkton-Wilmington No. 211 says that Iron Hill and Chestnut Hill were worked as early as the 18th century and as late as 1891. Both hills are right near Newark."

FLORIDA: A request for information on minerals in her locality was sent to Miss Vera R. Smith, 2011 Chamberlin, Orlando, Fla. Here is her reply:

"Wish I could oblige but—only sand, sand, and more sand. They say if you get it in your shoes (and I have!) you'll always return. And how stuff *grows* in it—luxuriantly—is amazing! We do have many interesting lakes and flowing springs. I heard there is a little cave near here on private property."

GEORGIA: The Georgia Mineral Society NEWS LETTER in its Jan-Feb., 1951 issue, p. 4, reports a diaspore occurrence as follows:

"Small tabular white crystals of diaspore are reported by King to occur at the abandoned Laurel Creek corundum mine in Rabun County, where it is associated with corundum. The mineral is somewhat similar to some varieties of amphibole but can be distinguished by its superior hardness and by optical properties."

IDAHO: G. Elmo Shoup, Box 756, Salmon, Idaho, sends in the following news item:

"The Ima Tungsten Mine of Patterson, Lemhi County, Idaho, producer of a large supply of tungsten during the last World War No. 2, is now again stepping up production and the town of Patterson is quite lively since a larger crew has been hired. Mr. Charles Hathorne is Manager of the Ima. We all hope that the U. S. Government will not again forget the tungsten miners after the conflict is over, like it did after World War No. 2, but continue to keep up the demand and pay a livable price for the tungsten concentrates and minerals."

ILLINOIS: At the fluorite mines of Rosiclare, Hardin Co., Ill., a ferriferous variety of sphalerite (marmatite) occurs. At times marmatite is found in groups of brilliant black xls, often associated with rock xls, which make attractive cabinet specimens.

INDIANA: E. H. Sarles, 2026 Elm Ave., Norwood 12, Ohio, has donated to R & M a number of interesting specimens which he collected in Bear Creek, Trevlac, Brown Co., Ind. Among the specimens were nice loose gray crinoids (complete heads) up to 3 inches in length. Some crinoid heads were broken open and being hollow were lined with bluish-white botryoidal chalcedony; small rock crystals were noted in a few specimens.

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A letter has been received from Paul N. Caravetta, 2923 W. Armitage, Chicago 47, Ill. Writes he:

"I have returned from southern Indiana recently where I met my good friend, Roy Grossman, of Batesville, Ind.

"When I visited the New Point limestone quarry at New Point, Ind., (in Decatur Co.) with Roy Grossman last August, we found, among other minerals, one group of calcite crystals which has a fluorescent coating on the crystals. The fluorescence is a pale orange under the long-wave light.

"Some brachiopods and corals from the Versailles (Ripley Co.), Indiana, region fluoresce a deep reddish-orange.

"What I have said about Roy Grossman is an understatement. I think he is wonderful. Judging by the rock-hounds I have met so far, I believe I can correctly say that all rock-hounds are wonderful people."

IOWA: The following interesting item has been sent in by Frederick A. Brown, 976-25th St., Des Moines 12, Iowa.

"In R & M for Jan-Feb., 1951, I noted the request for information about quartz and selenite xl occurrences in Des Moines and Polk Co., Iowa.

"I have been unable to find anyone who has collected quartz xls in Des Moines or Polk Co., and I think I know all R & M subscribers in the Central Iowa Mineral Club.

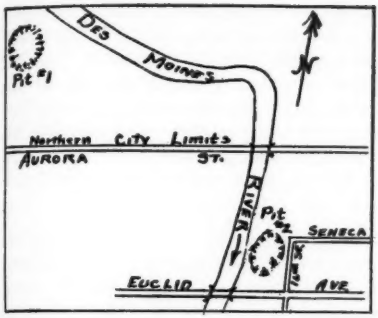
"I have a small (about one inch) agate with a small vug in which are sharp drusy quartz xls. This agate was found in gravel in a pit here in the Des Moines river valley .

"At a plant on the S. W. city limits of Des Moines, sand and gravel are produced and in the washer sump heavy minerals collect and must be removed occasionally. Panning of this material furnishes some fine gold (flour almost) and I have seen grains as large as a mustard seed. I have been told that the sand here in this valley carries gold values up to 50c per ton if carefully worked. Magnetite sand, with a scattering of small garnet xls, is also secured sparingly.

**On The Sketch Map**

"Pit No. 1. In coal measure shales, variegated in color, needle-like selenite xls in partings in the shale. I have found single crystals only sparingly, as much as ⅜ inch long and very clear.

"Pit No. 2. This pit is located about 1½ miles down the river. The shale in




**Pit #1. Needle-like crystals of selenite occur in partings in shale.**

**Pit #2. Selenite crystals in clay above shale.**

it is the same as in No. 1 Pit with an overburden of 10 feet. This clay, about 12 feet in thickness, is bluish and when wet very sticky. Topping the clay is shaly coal 4-6 inches. This contains plenty of pyrite and/or marcasite. The next above the coal is a loosely cemented limestone composed largely of small brachiopods (¼ to ½ inch).

"Selenite xls occur in the clay under the coal seam. Usually transparent or nearly so, the selenite is found in single crystals of the usual form, micro to one inch maximum. Also very small to multiple twins, as much as two inches long and in stellate groups.

"Immediately under the coal mentioned, where exposed to weathering, there is usually a shaly earthy iron sulphide, possibly copiapite or a variant thereof.

"The carboniferous shales along the Des Moines river where well exposed will often produce selenite crystals."

KANSAS: Interesting specimens of brownish limonited wood (limonite pseudo after wood) have been found at Emporia, Lyon Co., Kansas.

KENTUCKY: Pale smoky quartz xls up to 1 inch in length (some doubly terminated) are found in the fluorite mines at Lola, Livingston Co., Ky.

LOUISIANA: A very pure white pottery clay called "chalk" occurs near Spring Ridge Church in Caddo Parish, La.

MAINE: Some black xls of hornblende (amphibole) in a milky quartz vein (in phyllite) occur at the Bald Head Cliff, York Co., Me.

MARYLAND: Large pieces of petrified wood, grayish black in color and showing grain, have been found in Greenbelt, Prince Georges Co., Md.

MASSACHUSETTS: Arnold M. Dixon, RFD 403, Foxboro, Mass., has sent R & M a most interesting specimen from his area. The specimen is brownish petrified wood with a chalcedony center; it is 2 x 2 x 2 inches in size. A letter from Mr. Dixon informs us that the specimen was cut from a chunk his son-in-law, John H. Warren, discovered while enlarging his cellar. Mr. Warren lives at 21 Union St., Foxboro, about ½ mile west of the center of the town.

Mr. Dixon has sent in some additional notes and we will have more to say about the petrified wood occurrence in the next issue of R & M.

MICHIGAN: Harvey Franz, 1027 Ogden Avenue, Benton Harbor, Mich., has donated a number of those interesting dark brown limonite "fulgurites" found by him near South Haven, Van Buren Co., Mich. These are slender specimens, about ¼ inch diameter, and ranging up to 3 inches in length.

Bob Riecker, 9709 S. Prospect Ave., Chicago 43, Ill., informs us that honeycomb coral, cup coral, chain coral, straight shelled cephalopods, many types of fossil shells, and thousands of crinoid stem parts have been found in the dunes west of Shelby, Oceana Co., Mich. Many fine large specimens have been found.

MINNESOTA: Xonotlite, as pale pinkish masses with a little green diopside, occurs in a contact of a diabase dike with slate, at Mineral Center, Cook Co., Minn.

MISSISSIPPI: Petrified palm trees, resembling old logs, have been found near Winchester, Wayne Co., Miss.

MISSOURI: From E. N. Smith, c/o Geode Industries, New London, Iowa.

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comes the following note (dated April 3, 1951):

"I am sending you a small sample of galena found on the James K. Skeens farm in Clark County, Missouri; this farm is about 1 mile over in Missouri from Farmington, Iowa.

"It occurs at a depth of about 20 feet and is of a nice deposit.

"The part uncovered shows a nice vein and Mr. Skeens will, as soon as weather permits, proceed to open the vein and ascertain the true amount of the deposit. It has rained or snowed this winter in Iowa more than usual, making outdoor operations difficult. It will be a pleasure to report later on of the results of the opening up of the vein."

The specimen sent in is a nice loose 1 inch cube (crystal) of galena.

MONTANA: Very nice xls of amethyst (some containing inclusions of black tourmaline xls) have been found in Little Pipestone District, Jefferson Co., Mont.

NEBRASKA: Nice calcite xls have been found in a limestone quarry near Roca, Lancaster Co., Nebr.

NEVADA: Fine specimens of jasper, some mottled brown and grayish-green, occur in Bald Mountain Canyon, Nye Co., Nev.

NEW HAMPSHIRE: Fine sharp greenish xls of triphylite associated with microcline, muscovite, smoky quartz, etc., occur in pegmatite at Chandler's Mills, Newport, Sullivan Co., N. H.

NEW JERSEY: In the last issue of R & M, Edward J. Marcin of Ozone Park, N. Y., had a most interesting item on the noted Snake Hill locality (Hudson Co., N. J.), p. 148. It is a pleasure to report that another mineral, not new however, has been found at Snake Hill by Fred Schmeltz, 603 Fair Lawn Parkway, Fair Lawn, N. J. In a letter from Mr. Schmeltz, dated March 12, 1951, appears the following:

"I took a few boys with me to a new road cut for the Jersey Turnpike. This cut goes through part of Snake Hill which is a mound of trap rock at the lower end of the Hackensack Meadows. The enclosed sample is the only crystallized material observed; there were a few places that had small patches of white also, but nothing distinguishable."

The sample received was a whitish stilbite with a grayish tinge.

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Some unusually beautiful marcasites and other minerals have been received from Hobart Jones, 113 Adrian Street, Pompton Lakes, N. J. The specimens come from the clay pits of Parlin, Middlesex Co., N. J. A letter from Mr. Jones reads as follows:

"The clay pits are located in a vast area of sand. The clay under the sand is of various colors as red, black, white, gray, and mixtures of the different colors. Beautiful golden and silver-colored marcasites are found in the clay which has a very high sulphur content.

"This area was probably a forest at one time as petrified wood is found in the clay. Some of this wood is covered with golden marcasite and some is solid marcasite. Also found are clay geodes filled with sand and fine marcasite crystals.

"There is quite a variety of items to be collected here but it takes a lot of careful searching to find them as the pits are sometimes a mile or more in extent, and caution must be used as it is possible for a man to sink out of sight in places and never be found in the soft mire.

"The only tool needed is a G. I. pick. Old clothes and boots or rubbers should be worn especially when it is wet as good clothing is ruined by the clay.

"It takes several trips to the pits in order to locate the minerals. I have not yet fully covered the area but intend to do so this summer."

The marcasites received are extremely beautiful, some are round forming the so-called "sulphur balls", others are stalactitic, or encrusting wood. The petrified wood is not silicified but is carboniferous, having turned into lignite. Large specimens occur but they are fragile and the specimen sent us broke down into

1 x 1 inch lustrous black limb sections. This lignite (fossil wood) is found as sticks of black wood having the appearance of coal. Still another interesting mineral found in the pits are clay geodes which often have loose sand in them which causes a rattling sound when shaken close to the ear; these are called nature's rattleboxes.

Another letter received from Mr. Jones contains this interesting information which he received from Rutgers University at New Brunswick, N. J.:

"This specimens which you have collected in the vicinity of Parlin and Sayreville (nearby to Parlin) belong to the basal Cretaceous strata of our Coastal Plain deposits of New Jersey. These are the interlaminated lenticular masses of sand and clay which is termed the "Raritan Formation." Therefore, the age of the wood and other specimens is Cretaceous which is estimated to be approximately eight-five million years old."

NEW MEXICO: In the March-April, 1951, issue of R & M, Don Alfredo, 322 Linda Vista, Las Cruces, N. Mex., had a most interesting article titled "Apache Tears and other Mineral Oddities from the Mogollon Mountains, New Mexico." On page 142 he mentions "Goshawfuls," an odd mineral occurring at the locality. Some samples of these "Goshawfuls" were sent R & M where they were identified as thundereggs of odd nodular form. The locality is in Catron County, New Mexico, about 40 miles northeast of Mogollon. This is a new locality for thundereggs which are very popular with many collectors and especially those who cut and polish minerals.

NEW YORK: Nice groups of crude white xls of barite have been found in DeKalb, St. Lawrence Co., N. Y. And very fine specimens of olive-gray massive leucoxene associated with ilmenite (black), garnet (red), etc., are found in the titanium mine at Tahawus, Essex Co., N. Y. The leucoxene is a pseudomorph after ilmenite.

NORTH CAROLINA: We are indebted to C. W. Ervin, Sparta, N. C., for a clipping taken from the CHARLOTTE OBSERVER (Charlotte, N. C.), Sun. Feb. 18, 1951. The clipping is a long 2-column item titled "Minerals and Ores in North Carolina." The writer, George M. Bowman, is a member of the R & M A and his item is a most interesting one and we recommend it to those who appreciate North Carolina minerals.

NORTH DAKOTA: Nice selenite xls occur near the Little Missouri river, near Westerheim, Golden Valley Co., N. D.

OHIO: A very nice specimen of small dark brown gemmy xls of sphalerite on dark gray limestone has been donated to R & M by C. O. Gettings, 2001 Starr Ave., Toledo 5, Ohio. The locality is Woodville, Sandusky Co., Ohio.

OKLAHOMA: In the vicinity of Saddle mountain, about 8 miles east of Cooperton, Kiowa Co., Okla., conglomerates outcrop along the streams. Here crystals of pyrite up to an inch in size and also pseudomorphs of limonite after pyrite can be found.

OREGON: Native copper has been found at the Ball mine on Cedar Springs Mountain, Douglas Co., Ore.

PENNSYLVANIA: A letter dated February 3, 1951, has been received from Rev. William J. Frazer, 625 Main Street, Moosic 7, Pa. It reads:

"Today I had the experience of going down into an anthracite mine and I am sending you a small piece recovered from one section of the wall. This coal mine is at Old Forge, Lackawanna Co., Pa., located in the "Wyoming Valley" between Scranton and Wilkes-Barre."

The specimen from the coal mine is a thin slab consisting of white xline calcite, tiny xls of pyrite, and small masses of black anthracite.

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Howard V. Hamilton, 187A Franklin Ave., Vandergrift, Pa., has sent R & M a most interesting specimen of dark gray limestone, 2½ x 3 x 1 inch thick, which contains a number of thin gray to whitish layers of fibrous calcite. Tiny colorless calcite xls occur also in small cavities

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in the rock. The locality for the specimen is an outcrop about 1½ miles southwest of Tyrone, Blair Co., Pa.

RHODE ISLAND: Kyanite has been reported as occurring at Cranston, Providence Co., R. I.

SOUTH CAROLINA: Gem quality beryl has been found at McConnell Place, 3 miles north of Anderson, Anderson Co., S. C.

SOUTH DAKOTA: A nice dark brown petrified wood specimen from the Cheyenne river, near Wall, Pennington Co., S. D., was donated to R & M by Fred R. Klink, 1440 Bryan Avenue, Canton 6, Ohio.

TENNESSEE: Wad, an earthy black manganese oxide, occurs at Del Rio, Cocke Co., Tenn.

TEXAS: Mrs. Ruby F. Renfro, 2901 Bomar Avenue, Fort Worth 3, Texas, has sent R & M a number of nice specimens of calcite (white xls and xline in pinkish limestone). The calcite fluoresces red under the Mineralight. A letter from Mrs. Renfro reads:

"The deposit is on the roadside two miles southeast of Joplin, Jack County, Texas. The calcite occurs in a variety of forms in cavities and veins in a white to pink nodular limestone of lower Trinity, Cretaceous age. Both the limestone and the crystals are a local occurrence. The lime nodules range from about 1½ inches to 18 inches through. This material is not abundant and all the crystals are not fluorescent, even at this one locality. All the crystals are small, but they are usually well formed in sheets and cavity linings. The nodules of lime occur in a rather well-defined horizontal zone in a thick bed of red shale. The fluorescence is peach to a brilliant cerise red, the latter predominating."

UTAH: Dr. A. L. Inglesby, of Torrey, Utah, has donated to R & M some very fine slabs of greenish variscite which occurs near Grantville, Toole Co., Utah.

VERMONT: Artinite has been found as small white radiating xls on dark green serpentine at Lowell, Orleans Co., Vt. At the same locality, brucite is found as green-white fibrous veins in serpentine.

VIRGINIA: For the following item we are indebted to French Morgan, 2601 Brentwood Road, N. E., Washington 18, D. C.:

"Last October one of our members discovered thaumasite in a quarry in Fairfax County, Va., a few miles south of Falls Church. This is a zeolite new to this locality, and so far as I know, the first time it has been reported from Virginia. It occurs in three forms and is associated with prehnite, apophyllite, byssolite, etc."

WASHINGTON: A light green massive variety of brucite occurs in the magnesite quarries at Chewelah, Stevens Co., Wash. This brucite is sometimes carved and polished for ornaments, but is too soft to stand hard usage.

WEST VIRGINIA: Siderite has been mined on Davis Creek, near Charleston, Kanawha Co., W. Va.

WISCONSIN: Gemmy colorless little cerussite xls associated with galena have been found in the lead-zinc mines at Hazel Green, Grant Co., Wisc.

WYOMING: Beautiful specimens of petrified wood have been found in Eden Valley, Sweetwater Co., Wyo.

ALASKA: Nice gold nuggets have been found in Eureka Creek in the Kantishna Mining District, Alaska.

AUSTRALIA: Nice cleavages of bluish-white opaque topaz have been taken out of the General Foch mica mine at Londonderry, Western Australia.

CANADA: What is believed to be a large deposit of vermiculite has been discovered at Stanleyville, Ontario, about midway between Ottawa and Kingston. Samples are said to be of good quality, with good expansion characteristics and nice color. The deposits are close to trans-

portation, are easily accessible, and can be worked with a steam shovel. The deposit occurs along a ridge some 40 feet in height and has been indicated for a length of 1,800 feet across width of 100 to 150 feet.—U. S. Bureau of Mines MINERAL TRADE NOTES, Jan., 1951, p. 44.

DENMARK: Water worn pebbles of amber are found on the coast of Sjaelland Island, Denmark.

DOMINICAN REPUBLIC: Molybdenite associated with chalcopyrite occurs in a quartz vein at Caballo Creek, section of Caobal, community of San Cristobal, province of Trujillo, Dominican Republic.

ECUADOR: The Ecuadoran Government on December 16, 1950, acquired all property, machinery, and equipment of the South American Development Co., for $/2,500,000, payable between December 16, 1950, and March 31, 1951. The company operated at Zaruma the most important gold mine in the country.—U. S. Bureau of Mines MINERAL TRADE NOTES Feb. 1951, p. 10.

This transaction is of special interest to the Editor of R & M because in 1920 he was offered the position of mining engineer at the Zaruma mine. The very day the position was offered him, he started working as mining engineer for the Ramapo Ore Co., at Sterlington, N. Y., and—could not accept the Zaruma offer.

EGYPT: High-grade steatite (talc) is being produced at the Hamata mines on the Red Sea coast of Egypt.—U. S. Bureau of Mines MINERAL TRADE NOTES, Feb., 1951, p. 36.

ENGLAND: According to the announcement of the Mineralogical Society of Great Britain (Notice No. 72), at the meeting to be held on March 8, 1951, a paper by Mr. A. W. G. Kingsbury and Mr. J. Hartley, was to be read. The paper was titled "On the occurrence of bayldonite, stolzite, hydrocerussite and other rare minerals in the Lake District."

As the result of the finding, in 1947, of the rare lead-copper arsenate, bayldonite, in Brandy Gill, Carrock Fells, Cumberland, England, by the first author, a more comprehensive investigation of the district has been undertaken and a considerable number of rare species, including hydrocerussite, covelline, pseudomalachite, cornwallite, antlerite, and mottramite, none of which was previously known to occur in the Lake District, have been found; in addition, new occurrences and a number of definite localities have been found for some of the well-known minerals.

FINLAND: Nickel deposits have been found at Ulvsby, near Bjoerneborg, in Finland and are reported to be more extensive than those at Petsamo. The ore is said to contain 1.5 percent nickel, 1 percent copper, and traces of gold and platinum.—U. S. Bureau of Mines MINERAL TRADE NOTES, Jan., 1951, p. 24.

GREECE: Beautiful specimens of jarosite, as brownish druses in cavities of brownish rock, are found in the silver-lead mines of Laurium, Greece.

GREENLAND: Brown slender crystals of astrophyllite occur in the rocks at Narsarsuk, Greenland.

INDIA: Nice specimens of thin transparent sheets of muscovite enclosing magnetite are found in the mica mines of Madras, India.

IRELAND: Nice xls of apophyllite, white in color, occur at Ballintoy, County Antrim, Ireland.

ITALY: Very nice specimens of iridescent limonite are often found in the iron mines of Rio Marina, on the Island of Elba, Italy.

JAPAN: Brownish xls of staurolite with pyrite in mica schist, are found at Shitachi, Ibaragi-ken, Honshu Island, Japan.

KENYA: Loose white fibers of anthophyllite (asbestus) from Kaptumet, Kenya, Africa, have been sent R & M by John S. Albanese, P. O. Box 536, Newark 1, N. J.

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MADAGASCAR: Nice rock xls, sometimes incomplete and etched, come from Mont Bity, Madagascar.

MEXICO: Water-clear prismatic xls of danburite are found at Charcas, San Luis Potosi, Mexico.

NEWFOUNDLAND: Contracts have been let for quarrying machinery and equipment to be used at the gypsum deposits at Flat Bay Brook, St. George's, on the west coast of Newfoundland, about 55 miles south of Corner Brook, where, according to the reports, there is a large gypsum deposit with a purity of 99 percent.—U. S. Bureau of Mines MINERAL TRADE NOTES, Jan., 1951, p. 35.

NORWAY: One of the first tasks of the State Mining Co., in Norway is to start exploitation of the newly discovered large niobium deposits at Holla in Telemark, Norway. Almost the entire output will be exported in concentrated form.—CHEMICAL AND ENGINEERING NEWS, April 2, 1951.

PANAMA: Burton E. Davis, Box 1181, Cristobal, Canal Zone, has sent R & M a small grayish chalcedony that is encrusted with white cacholong (opal). The locality is near Guinea Point, Canal Zone.

PERSIA: Akbar Ouskouian, of Meshed, Iran (Persia), has sent R & M a number of small specimens of galena which is coarse xline and pure. The mineral comes from the Abshar Akhlomad mine, about 50 miles west of Meshed, Persia.

SCOTLAND: Stibnite, as xline masses in rock, have been found at Glendinning near Langholm, Dumfriesshire, Scotland.

SPAIN: Whitish Carlsbad twins of orthoclase occur at Zarga Pejo, Madrid, Spain.

TURKEY: White masses of priceite are found in the famous meerschaum deposits at Panderma, Asia Minor, Turkey.

UGANDA: A nice white xl of beryl has been donated by John S. Albanese, P. O. Box 536, Newark 1, N. J. The locality is Nyabakweri, Lugarama Area, southwest of Ankole, Uganda, East Africa.

WALES: Nice xls of celestite have been found on Barry Island, 8 miles S. E. of Cowbridge, Glamorganshire, Wales.

## INDUSTRY DEVELOPING PHOSPHATE DEPOSIT IN MISSOURI BASIN

Billings, Montana—A mineral deposit formerly considered too low grade for practical commercial use will be developed in the rich Missouri River Basin by the Victor Chemical Works of Chicago, Ill., through hydroelectric power supplied by the United States Department of the Interior, it was announced December 27, 1950, by W. G. Sloan, retiring chairman of the Interior Missouri Basin Field Committee.

Manufacturers of numerous essential chemicals, Victor Chemical Works is now opening a mine on the Maiden Rock phosphate deposit and constructing a $5,000,000 plant for processing the rock into elemental phosphorus in the vicinity of Butte, Montana.

Victor Chemical Works' decision to develop the Maiden Rock deposit and process phosphate rock at a plant to be powered by the Bonneville Power Administration is an outstanding example of what private industry can do in developing hitherto unused low-grade deposits in the Missouri River Basin, Mr. Sloan said. It should pave the way for commercial development of other low-grade deposits in the Basin, he added.

Next to Anaconda Copper Mining Company's plant, the new phosphate plant will be the second largest industrial operation around Butte. The plant is being erected on 543 acres of land at Silver Bow, about seven miles west of Butte, at a junction of the Union Pacific, Northern

Pacific and Milwaukee railroads.

The Maiden Rock deposit is part of the Melrose phosphate field, first discovered by the United States Geological Survey in 1910. It is about 25 miles southwest of Butte on two properties in the public domain formerly leased to the Anderson Phosphate Mines, Inc., and the Martin Phosphate Mining Company.

Through the United States Bureau of Land Management, arrangements were made for the Victor Chemical Works to take over the leases from the two companies. The land consists of about 2,500 acres.

"Availability of power from the Bonneville Power Administration together with ample phosphate rock at Maiden Rock prompted the Victor Chemical Works to undertake this long-range and important industrial development," Thomas F. Edson, executive vice-president of Victor's A. R. Maas Chemical Company Division at South Gate, Calif, stated. Mr. Edson is in charge of the project.

"This commitment, together with 25,000 kilowatts of interruptible power under contract to the Montana Power Company, will use the first firm generation from the Hungry Horse Plant," Mr. Edson said.

"Excellent rail facilities are available for transporting the mined phosphate rock to the Silver Bow plant—about 25 miles away," Mr. Edson pointed out. "This is the first time Victor Chemical Works has ever operated its own mine," he added.

"The Maiden Rock deposit has never attracted the fertilizer industry in the past because the phosphate content of the rock which runs about 27 percent is not high enough in grade for making superphosphate economically," Mr. Edson said. "With power soon available, this rock can be successfully processed in an electric furnace into elemental phosphorus, and then eventually into phosphoric acid. This acid, which is produced in company plants, has been scarce for the past ten years," he emphasized.

Plant facilities, which will include an electric furnace and a kiln, are scheduled for completion in the fall of 1951. An administrative office and laboratory building, a shop-storeroom, an oil-paint storage building, five huge cylindrical bins for storing the mined phosphate rock, a clarifier for treating contaminated water and a change house also will be built. The change house for employees includes first-aid facilities, and a dental room for checking workers for possible teeth damage during processing operations.

C. G. Derick, chemical engineer with the Chicago Office of the Victor Chemical Works, is resident engineer in charge of construction. Nearly 200 persons will be employed at both the plant and mine.

Mining operations at Maiden Rock will be similar to coal mining and will include timbering for roof support, drilling into the rock face, and blasting to recover the broken rock. General exploratory and development work, including the sinking of drifts, is now under way. The mine will eventually produce about 500 tons of phosphate rock daily.

Transported by rail to the Silver Bow plant, the phosphate rock will be dumped into a hopper and carried by conveyor for storage in five 70-foot high cylindrical bins until ready for processing.

Phosphate rock will be nodulized in the kiln to provide suitable physical structures for use in the electric furnace, where it will then be mixed with silica and coke. At high temperatures, the phosphorus will be volatilized by thermal reaction and then condensed into elemental phosphorus and slag. The slag can be used in railroad beds as aggregate.

Stored in steel tanks, elemental phosphorus will be shipped to processing plants of the Victor Chemical Works at Chicago Heights, Ill.; Nashville, Tenn.; Morrisville, Pa.; and at South Gate, Calif.; for manufacturing into commercial products. The company makes about 100 different products for industrial use.

At these plants, elemental phosphorus will be oxidized into phosphoric acid. The acid can be used for making calcium

(*Continued on Page* 282)

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# THE MICRO-MOUNTER

Conducted by LEO N. YEDLIN
P. O. Box 11, Bethel, Conn.

In the course of our weekly journeys from Connecticut to Long Beach, New York, it is our wont to cover new territory. Last week we visited the Kinkel Quarry, at Bedford, N. Y., arriving at about 4:30 in the afternoon (1630 hours, as we used to say, and may well be saying again.) It was a lovely sunny day, cool, too early for insects, and most favorable for collectors. In spite of the fact that the quarry has been inoperative for some time we expected to see a number of mineralogists exploring the dumps and exposed pegmatite walls. The place was deserted. Perhaps it was the fact that no work had been done here for a long time. Maybe the spring urge to get into the hills has departed with the advent of television. It could be that the Brooklyn and New York baseball teams, locked in mortal combat in the first of their "crucial series," was the deterring factor. At all events, no collectors.

We stayed about half an hour. What we collected was worthwhile both for the m/m enthusiast and gatherer of hand specimens. Here is a list:

ILMENITE, in seams and plates throughout the microcline.

MICROCLINE, in good xls up to an inch on an edge.

RUTILE, grey masses of reticulated needles, coating the feldspar.

ALBITE, micro xls in vugs, with wad.

PYROLUSITE, in beautiful dendrites.

ROSE QUARTZ, pale but good.

MUSCOVITE, in vugs as minute xls, with albite.

TOURMALINE, black lustrous xls.

AUTUNITE, small plates.

MICROCLINE, ALBITE, QUARTZ and BOOK MUSCOVITE in large masses.

Make no mistake about it. This locality is good!

We've just purchased a new light for the microscope. The one previously described is excellent, but generates too much heat, and for summer work something cooler is needed. Stocker and Yale, of Marblehead, Mass., have produced a miniature fluorescent desk lamp. Bulbs are 4 watts each (2 in the lamp), lamp head is mounted on a weighted stand by means of a flexible (jointed) shaft, permitting variable positions. The lamp head has mounted within it a 4X magnifier, which permits scanning of material without the use of the 'scope. The transformer and wall plug are in one small assembly, so that this portion of the lamp is out of the way. Runs cool and quiet. It has the disadvantage of not throwing a pinpoint or beam of light, but gives off a white diffused light over a large area. Excellent for magnifications up to about 48X. Sells for about $20.00 complete, and is available at Harry Ross and National Scientific Instrument Co., both in New York City.

CORRECTION: Recently we described some garnets from West Redding, Conn., as showing the tetrahexahedron. Should have been the hexoctahedron. These were the brilliant faces between the dodecahedron and trapezohedron. Each dodec showed four of 'em. Twelve fours—hence hexoctahedron. There are loads of 'em from this locale.

NEWS NOTES: Reports that Bethlehem Steel has drilled in the vicinity of the old French Creek iron mines in Pennsylvania, and that the cores show ores and minerals almost identical to those of this famous long abandoned locality. Let's hope . . . Lou Perloff (Now an attorney with the National Labor Relations Board) sends cards from Ashville and Burnsville, N. C., heart of the mineral country, where he is checking cases and holding hearings. Now there's a perfect assignment for a mineral collector . . . Paul Desautels announces a wondrous addition to his collection—a wife. We were at the wedding in Baltimore.

**Recent Addenda:**

PYRITE, Sayreville, N. J. Tiny xl groups uncovered when washing clay from large specimens.

DYSANALYTE, c u b o - octahedrons, Hot Springs, Ark.

HYDROTITANITE, cubo-octahedrons pseudomorphic after dysanalyte.

FRANKLINITE, minute cubes.

COPPER in smithsonite rhombs, Tsumeb.

MAGNETITE, showing hexoctahedrons, Iron Springs, Utah.

TUNGSTITE, clear yellow prismatic xls. A new find in California.

We have a letter from C. S. Friday, of Whiting, Indiana. He asks: "Can you recommend an inexpensive microscope that can be used in studying crystals? What power would be best suited, the make, and where can one be gotten?"

This is the $64.00 question. Or the $2.00 one. Or the $485.00 one, depending on the type of instrument you want and the amount of money you have available after taxes and groceries are taken care of. The simple "Penscope" at a couple of dollars (20X pocket instrument), or a more elaborate, tho similar instrument (20X-40X-60X) at about six dollars, or a simple monocular instrument with about 2X objective and 10X ocular ranging between $20 and $40 will do the trick. The regular 'scope, with stand, stage, etc., is preferable, for it provides stability and the minerals can really be studied. Of course, the binocular microscopes are best, but these range in price from about $200 to $485 in price, unless you can pick up a used machine. The manufacturers are many, and all are good. Zeiss, Leitz, B & L, American Optical (Spencer) are standard makes. All have offices in New York City. Dealers in used instruments in New York are Harry Ross, National Scientific Instrument Co., Waelden and several more listed in the New York telephone directory. THE NEW YORK TIMES Sunday edition has carried the advertisements of several distributors on the back page of the sports section, notably Stanley Optical Co. Edmund Salvage Co., in New Jersey has surplus lenses and probably inexpensive microscopes as well. Medical supply houses stock them. Ward's Natural Science Establishment in Rochester has a catalog. They can be had.

We think a magnification of about 20X to 36X is best for this purpose. These are the magnifications most often used by us in our work, tho we do go to 72X and 90X on occasions. We recall very vividly noting some dirty red druses on a South American specimen. At 36X they were still dirty red druses. At 72X they turned out to be the most beautiful red hemihedral xls of greenockite you ever saw. Which only proves that there's no set rule for anything. You can't generalize. But for ninety percent of the work you can go along on the lower powers. When you've reached the stage where you have to worry about high magnifications then you're going to worry about an elaborate microscope. But meanwhile, you can have the joy and satisfaction of seeing minerals as they should be seen. There's nothing better than that.

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**New Rockhound Emblem**

A new emblem for rockhounds has been put on the market by William H. Walker of Fall River Mills, Calif. It is a small pin of unique design and its purpose is to serve as an identification emblem for rockhounds. The center of the pin is left blank so that the wearer may insert any type of cabochon he desires. Several styles are available at reasonable prices. See the advertisement (Rockhounds of America) on page 310 in this issue.

Incidentally Mr. Walker will have a booth at the June Convention in Oakland, Calif.

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**One for the Library!**

Editor R & M:

I am enclosing check for $3.15 for a year's subscription to R & M. I should like it to begin with the Nov.-Dec., 1950, issue as there is an article on "Minerals in Medicine" which I find very interesting and am sure that many of the Sanitarium patients would enjoy reading it. My own copy is in use most of the time so am sending for an extra subscription for the Sanitarium library.

Dr. W. M. McNeely
St. Lawrence Sanitarium,
Cornwall, Ont., Canada

February 5, 1951

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# THE AMATEUR LAPIDARY

**Conducted by COMMANDER JOHN SINKANKAS**
1107 S. Oakcrest Road, Arlington, Va.

**Amateur and professional lapidaries are cordially invited to submit contributions and so make this department of interest to all.**

### Wall Cases for Cabochons

If you have a knotty-pine paneled room or any room for that matter, where the walls need something in the line of pictures for decoration, consider seriously making flat cases for your best cabs as a means of decor. A neighbor of mine in Norfolk, participating (as we all do in the armed services) in a kind of potlatch when moving to a new station, gave me a box of window glasses of 10" x 14" in size. This new acquisition plus some scraps of plywood and grocery store cardboard was instantly converted into wall display cases.

Cut the ¼" plywood to 1" wide strips, or if cabs are thicker, to 1⅛" strips. Pass them over a table saw so as to cut a recess ⅛" deep and ⅛" from the edge; this is the notch that will hold the glass. These strips when cut to proper lengths will make three sides to the case, the fourth side is the top and is made from plywood also but must be narrower than the others so that the glass may pass over it when the case is closed. All four sides are glued and nailed together. Ordinary strong cardboard from grocery store boxes is cut out for the bottom and glued and nailed in place. When the glue is dry, gummed paper tape is applied to the bottom corners to cover the cardboard. The whole business is then painted with semi-gloss paint of any desired color but the notch to hold the glass is left clean.

When dry, the glass is inserted from the top and gingerly forced down to the bottom so that it is held on three sides by the notches in the plywood strips. The edges of the glass may have to be taken down slightly by a wet carborundum hone to remove catchy edges.

The inside mounting is also a piece of cardboard painted white on one side. Over this side is stretched some plain white silk, rayon, or nylon material. The cabs are shifted around on the cloth until the desired arrangement is achieved, then each is glued in place with a generous drop of model airplane cement (cellulose nitrate or aircraft dope).

The cemented stones must be allowed to remain level overnight for the cement to dry well. Enough cement must be used to hold the stones firmly but not so much that it oozes from the sides. Press each stone firmly to the cloth-covered cardboard so as to cement the cloth down at the same time, otherwise the weight of the stones may cause the cloth to sag.

The exhibit case is prepared for the stones by padding the recess generously with cotton batting with enough thickness to force the pad holding the stones against the glass. Now take the stone-mounted pad, place over the cotton, press down to permit the glass to be slid into place and continue until glass is seated all the way. A small screw-eye in the exact center of the top panel is used for suspension, while a cup hook on the wall of the room provides the suspension point.

CAUTION: Wipe all the stones off with alcohol before cementing, clean glass panes thoroughly also, thereafter put on a pair of clean gloves to avoid fingerprints and your gems will shine with pristine splendor.

SUGGESTIONS: If cases must be shipped, place stone-mounted pad on bottom of case, stone side up, cover with the batting and put back the glass. Slabs, in combination with finished stones, add much interest to the display. Avoid geometrically perfect arrangements. Prepare small and neat typed labels, with locality, for the benefit of visiting friends. Consult your wife on the color to be used in painting cases. If a stone must be removed, pry it off carefully and scrape with a razor blade to remove cement

from stones of 6 and up in hardness. Softer stones can be cleaned by bumming some of your wife's nail polish remover for a solvent. While you're at it, mass produce and make a dozen at a time, it's more efficient.

**Stowing Your Faceted Gems**

Now that we have taken care of our cab cutting friends, let's see what can be done for the faceters.

I don't have to tell you about "paper worn" stones, you have all seen them, edges looking like someone had sanded them off in their constant banging around in a diamond paper. Shame too. If you're going to spend a lot of time turning them out, it's up to you to make them a decent home. The following idea is not new but it bears repetition, and I'm going to thank Lou Frederick of Longview, Washington, for telling me about it.

Get a good grade of air mail paper, the kind that comes in pads, and one or more cigar boxes from your tobacco expert, also some white surgical cotton. Fold each sheet of paper lengthwise into thirds with the center part somewhat larger than the side parts. Then fold up the other way about three or four times to make a neat package. The exact length of each fold is determined by the size of your cigar box. If the papers are folded properly, three rows of them will fit across the box and the lid should come down just touching the edges of the packets when they are standing on end. About ninety papers will fit into a standard stogie box.

Next, cut up your cotton into pads to fit inside the paper packets, make them rather thin so that the packet will not be bulky and also make them 1/8" shorter in each dimension than the paper for the same reason. The cotton should be just thick enough to allow the pavillions of the stones to make their own seats, then when the paper is opened up, the stones will be faced up and a whole lot of juggling and jockeying with tweezers is avoided.

Each paper is labelled in the upper left hand corner with the common name of the stone and alongside is placed the species name. At the bottom give the locality, if known, and in the center, any remarks such as style of cut, etc., as desired. Arrange in the box alphabetically.

The above scheme is very simple, compact, and systematic. The cotton is shockproof and an elastic band around the box enables you to carry stones anywhere in relative security. For small stones of the same variety, as many as twelve can be placed on one pad without fear of them shifting about and rubbing against each other. For rare, soft, or sensitive stones, the above scheme is practically mandatory. As was done for cabs, clean your stones with alcohol and subsequently handle with diamond tweezers to avoid fingerprinting.

**Other Exhibiting Hints**

Large faceted stones can often be effectively displayed by making small three or four-legged stands for them out of wire. Use copper wire, preferably devoid of enamel. Make a ring out of paper that will be somewhat smaller than the girdle of the stone, measure its circumference and cut a piece of wire to suit. To this wire solder three or four legs with silver solder. Finally roll this wire to a circle and close ends with ordinary soft solder. Clean well and paint black.

**Faceting Apatite**

Rather constantly available on the present market are the hexagonal slightly greenish-yellow prisms of the Cerro Mercado, Mexico, apatite. These when cut properly, display a fine brilliancy and more than an insignificant dispersion or fire. Undoubtedly, many of you have bought a few grams at one time or another and tried your hand at cutting this difficult material. Here's the method I use which seems to be particularly successful.

Before launching into a discussion of the exact details it may be wise to brief you on the selection of rough since much of it is worthless although not always apparently so. As in so many rough gem materials the best faceting material is found in the apex of the most perfect crystals. The quality often improves also as the size of the crystal decreases. One end of the crystal is usually terminated

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and the other broken or shattered. It is this end which gives rise to the imperfections which trouble the lapidary. The cracks in the material often extend well up into the clear zone and most often are so fine that only the most careful observation under strong reflected light will reveal the telltale iridescence of the fractures.

After examination, saw your rough on an evenly running blade avoiding all heat. Apatite is extremely brittle and thermosensitive. Preform on a smooth 220 wheel, keep the stone cool. Dop apatite with pure stick shellac because the low melting point of shellac requires less heating of the stone than would be the case with ordinary cement. I use a large fruit juice can for my dopping stand. The sides are cut out to permit placing a small alcohol lamp underneath. The flame is turned down low. Place your preform on top and on its apex place a small chip of stick shellac. When this chip begins to melt, apply your heated dop which has been previously coated with a sufficient quantity of shellac. As the stone cools, align it with a piece of wood. Do not use your fingers since the slight moisture almost always present on the human skin may be enough to cause the stone to rupture from too rapid cooling. Most dopping jigs have an aligning faceplate made of steel or brass against which a freshly dopped stone may be pressed to hold the stone while the cement is hardening. Such bare metal plates will almost always crack a stone because they are so much colder. A face plate may be improved in this respect by covering it with a piece of paper masking tape, although for apatite and other sensitive materials it is wiser to avoid its use altogether.

The dopped stone is cut with 1200 grit diamond-impregnated copper lap. It cuts rapidly and care must be exercised to prevent overcutting. In selecting the style of cut avoid large area facets whenever possible. Never cut squares since the weakness of the sharp projecting corners will show up later in polishing because of the extreme susceptibility of these projections to crumble and furrow the facets. For the first try on apatite a small simple octagon stepcut may be as good as any to make your mistakes on.

In polishing, a smooth tin lap is used, preferably one that has been used quite a bit and whose scoring has almost disappeared. The lap is run at slowest speed and a razor blade allowed to drag the surface to dislodge any small particles, wet the lap and wipe off with a clean swab of cotton. A pinch of Linde A is put in a wineglass or a small bowl and an inch of water is placed over it. The water is agitated with a clean cotton swab so as to give it the appearance of milk. Apply the swab along the outside of the lap and proceed to polish using firm pressure. Let the inside of the lap remain dry and clean. When the facet has lost its lapping pits, shift the stone over to the inside of the lap using a finger tip wetted with saliva as lubrication, then let the stone polish dry for a few seconds at a time. Proceed here with caution to avoid overheating and cracking.

In the above polishing procedure, the use of Linde A can be dispensed with altogether but its use does speed up the initial polishing while the last bit of sparkle and removal of fine scratches are taken care of on the dry and clean portion of the lap. The latter phenomenon may merit further discussion since one would say off-hand that no polish should result since no polishing agent is applied. It may be explained in one or both of two ways: A well-worn tin lap can be expected to have imbedded in its surface a small quantity of polishing agent which ordinarily cannot be removed altogether unless the lap is turned down to pure metal. The second explanation may be that the tin has oxidized and formed a thin film of tin oxide which is of course, a polishing agent. In either case we may expect that a certain amount of the apatite has also been abraded off the surface of the facet and acts as a polishing agent in combination with the others discussed above. It is interesting to note that a heavy paste of Linde A on a tin lap leaves a facet with a series of ex-

tremely fine striae which are so numerous that they impart a uniform gloss to the facet but not the sparkling transparency of a perfect polish.

In polishing apatite and other soft materials, polish very slowly and with patience, avoid heat at all costs, since the generation of heat is probably the greatest hazard of all in polishing. Softer materials seem to be quite thermosensitive and brittle all at the same time. It is my belief that most scratching of gems while polishing is due to minute particles spalling off the surface of the facet because too much local heat has been generated. These minute particles can then agglomerate into large enough pieces to form the typical deep and ragged furrows so annoying to the lapidary. In this connection the metal laps are probably better than those of plastic or wood because of their superior heat-conducting properties. It is noted in this connection, that when apatite is faceted on lucite, furrowing and crumbling are so uncontrollable that a satisfactory polish is the exception rather than the rule.

One more point, as in most crystalline materials, apatite has slightly different degrees of hardness in certain directions depending on their relationship to the crystallographic axes and therefore some facets will polish much more quickly than others. Persistent scratching in one polishing direction can most often be controlled by changing the direction of polishing by moving the dop stick to another place on the lap.

In redopping avoid touching any part of the stone with the bare flame of the alcohol lamp, otherwise cracking is very likely to result.

When cutting the bottom-most pavilion facets of apatite it is often wise to drop to a quite shallow angle of say 20 degrees in order to cut a series of very small facets on the extreme tip. These will leave a "hole" in the gem but will guarantee a neat finish on this sharp extremity which otherwise may crumble noticeably in either lapping or polishing.

Apatite girdles should be substantial in thickness to give strength.

In undopping the finished stone don't be so impatient as to try to use your fingernails to remove blobs of wax, avoid also razor blades or any steel instrument. It is best to pop the stone into a small closed jar of alcohol to dissolve the wax. Remove from the alcohol with wood tweezers since even the hardened tips of diamond tweezers may mar the stone.

Good Luck and please let me know how you make out. Remember, keep down that heat!

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## VAN AMRINGE NEW CHAIRMAN OF PHYSICAL SCIENCES DEPARTMENT

Edwin V. Van Amringe, founder of the geology curriculum at Pasadena City College some 25 years ago, has recently been named Chairman of the Department of Physical Sciences at that California Institution.

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### Excited Over Lapidary Department!

Editor R & M:

I was very pleased and excited to find the article in the last ROCKS AND MINERALS on lapidary work for the amateur.

I work with my husband in our lapidary and we agree with Commander Sinkankas that wet sanding is tops. I certainly hope ROCKS AND MINERALS will keep the lapidary section coming.

We are New Hampshire rock hounds and depend upon ROCKS AND MINERALS to help us along, as we are only beginners.

Grace Williams
New London, N. H.

April 23, 1951

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### Lapidary Bulletin #1

Minerals Unlimited, 1724 University Ave., Berkeley 3, Calif., have recently issued their Lapidary Bulletin No. 1. It is an 8-page price list and full of items of value and interest to cutters—agate, aventurine quartz, bloodstone, citrine, jade, opal, tiger eye are only some gem quality minerals featured while various lapidary equipment items are also listed. Send for your copy of this new price list—it's FREE!

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### Hill Issues Catalog 24

V. D. Hill, Rt. 7-C, Box 188, Salem, Ore., has recently issued Catalog No. 24. This is a 24-page price list full of interesting items such as facet cut gemstones, cabochon cut gemstones, engraved stones, fine mineral specimens, meteorites, single loose crystals, ultraviolet lamps, lapidary equipment, books, etc.

Send for this interesting catalog today—

# THE SAND COLLECTOR

Conducted by PETER ZODAC, Peekskill, N. Y.

Due to the keen interest in sand, as evidenced by many of our readers, we believe a column devoted to this subject is in order. This column will be run regularly, if readers will support it with notes.

### Quartz Sand From Parlin, N. J.

We are indebted to Hobart Jones, 113 Adrian St., Pompton Lakes, N. J., for the following item:

"I am sending you a sample of sand which was collected from a clay pit located at Parlin below New Brunswick in Middlesex Co., N. J., just off of N. J. Route 28. The pits here are located in a vast area of sand, in places this sand extends down to a depth of 200 feet or more and under this sand is the clay that is used for making bricks, pottery, and tile.

"The sand, which is removed by power shovels, leaves a wall of sand sometimes 100 feet in height. It is of various shades of brown, white, gray, and light pink. The sand is very fine and trickles down the face of the sand wall carving out miniature ravines. The winds also blow the sand into waves and ripples making a beautiful picture in the face of the sand wall."

The sample received consists of a grayish fine-grained sand made up chiefly of quartz (colorless and milky, some brownish and a little reddish). The only other mineral present is muscovite, which is quite plentiful and occurs as tiny silvery flakes.

### Gem Sand From Idaho

A letter dated April 10, 1951, and addressed to the personal attention of the Editor of R & M, came from Don Gabriel, 14564 Grandmont Rd., Detroit 27, Mich. Writes Don:

"Its been a long time since I wrote you last although every issue of the magazine seems like a letter from you.

"I was thinking about you just last week when I was only about a mile from your house but didn't want to "drop in" and see you. You see, I flew from New York up to Springfield, Mass., and went right over Peekskill.

"As you well know, Pete, I am no sand collector but I've been reading your page on sands and it reminded me of some I picked up on the trip after I left you in Texas. I don't remember if I told you, but I did quite a little panning for gold up in Idaho. I brought about a quart of gold-bearing sand back with me as a souvenir. I went down to the basement and dug it out and I am sending you a small bottle of it. Hope it is of some interest to you. I call it "gem sand" because of its contents. There are zircon xls (fluorescent), red garnets, diopside (green), magnetite (black), and a couple of unknowns. Besides gold there was amalgam and quite a bit of liquid mercury. It was rumored that diamond, platinum, topaz and cinnabar were found but these I doubt very much. I do know that a little above where I was there was a lot of large size sapphire, some of which cut star stones. This sand is from the Rock Flat gold placer area near Meadows, Washington Co., Idaho."

The sands were beautiful, chiefly red in color due to the preponderance of red garnet which was of gemmy quality; pale brownish gemmy zircon, gemmy diopside, gemmy rock xls, black opaque hornblende, black obsidian, etc.

### Black Sand From Idaho

We are indebted to G. Elmo Shoup, President, Wonder Lode Claims, Inc., Box 756, Salmon, Idaho, for the following item:

"The Middlefork of the Salmon River, located 54 miles below Salmon, Idaho, and which drains out of the Idaho Primitive Area, and is accessible by boat or foot only, has along its banks large deposits of concentrated black sand containing the following: ilmenite 55.4%, magnetite 26.9%, zircon 10.7%, and some thorium, monazite and scheelite. Under this sand and on the bedrock lies gold,

averaging about 45c per yard. On the hillside many veinlets of ilmenite are found in gray quartz, some being strongly radioactive. This area will someday be of great importance in the production of ilmenite and other minerals."

**Brannerite-Bearing Sands From Idaho**

Mr. G. Elmo Shoup of Salmon, Idaho, sent R & M another item plus a nice sample of brannerite-bearing sands. Writes he:

"I am sending you some brannerite-bearing sand which comes from the John Weidman placer property, Valley Creek, Stanley, Custer Co., Idaho. With the brannerite occurs cinnabar, zircon, gold and some monazite. This is the only brannerite that has been reported in the U. S."

Brannerite, a hydrated metatitanate of thorium, zirconium, uranium, yttrium, etc. occurs as small black rough prismatic crystals and grains in gold placers in the Stanley Basin of central Idaho. The sand is light brown in color and consists chiefly of quartz (white to brownish) with zircon, monazite, etc. and of course the brannerite which is quite plentiful. Brannerite, first found in the Stanley Basin, was named after Dr. John C. Branner.

**Two Sands From England**

Mrs. Francis Delaney, 37 Cliff St., Yonkers 2, N. Y., has sent R & M two sand samples from her native England. A note received from Mrs. Delaney reads as follows:

"The one labelled Fair Oak is from a small sand pit, or quarry, at Fair Oak, a suburb of Southampton. The vial labelled Blackpool is from Blackpool beach, the British answer to Coney Island."

The Fair Oak sand is a dark gray, very fine grained sand and consists almost entirely of quartz. The Blackpool sand is also fine grained, gray in color, and it too consists almost entirely of quartz (colorless, white and brown). Southampton is on the southern coast of England; Blackpool on the west coast.

**Coral Sand From Bermuda**

M. V. Brubaker, R 2, New Holland, Pa., has very kindly donated a nice sample of sand from a beach near Hamilton, Bermuda Islands, that was collected about 20 years ago by his sister who visited there. The sand is a fine grained mottled sand — grayish, whitish, pinkish — and consists entirely of coral (gray, white, and pink).

**Mica Sand From North Carolina**

E. H. Sarles, 2026 Elm Ave., Norwood 12, Ohio, has sent R & M an interesting sand that is brownish in color and consists largely of mica (muscovite) with some quartz, feldspar, etc. It is from a decomposed, very micaceous, pegmatite and was collected on the roadside in Montreat, N. C., about 2 miles from Black Mountain, N. C., in Buncombe Co.

**Lake Michigan Beach and Dune Area**

Harvey Franz, 1027 Ogden Ave., Benton Harbor, Mich., sends in the following interesting notes:

"To lovers of the great out-of-doors few localities are more interesting than the beach of Lake Michigan and the Dune Country which follows the great curve of the Lake from Saugatuck, Michigan, to Michigan City in Indiana. Nowhere can the botanist find flowers and plants in greater variety than on the wooded dunes and the wind-swept barrens, around the edges of the small lakes and in the swamps of this region. These same natural features provide ideal conditions for the lover of birds or the student of insects, for the artist or the amateur photographer. The mineralogist can always add to his collection on even the shortest walk along a stony beach, and a hike on the sand dunes always proves interesting.

"One of the first things the observing hiker will note is the abundance of iron ore among the beach pebbles and in the sand of beaches and dunes. At various places in the older and lower dunes which mark the highest levels of Glacial Lake Chicago iron appears as Limonite, usually as red sand which is really grains of quartz stained and sometimes loosely cemented with limonite. It may appear as "Bog Iron," and in rare instances in the form of tubes, which have been discussed in ROCKS AND MINERALS.

"On the later and higher dunes which border the big Lake, iron is present as

magnetite, the black grains of which are mixed with the ordinary quartz grains. On certain dunes the sand is somewhat stratified, having thin layers which contain most of the magnetite, alternating with thicker layers of the ordinary sand. At most places on the sandy beaches a magnet will collect the black grains from the sand, but at certain places it is much more abundant. Under these favorable conditions it is occasionally found as "Black Sand", in bars which may be three or four feet wide, up to two inches deep, and several yards in length. Especially when wet it is a sooty black, in appearance not unlike coal dust. In fact, one man informed the writer that it was coal "washed ashore from the big boats out there." It is separated from the ordinary beach sand by the action of the waves, really a combination of gravitation and flotation.

Besides magnetite, this black sand contains iron in other forms, and on some beaches grains of garnet are present in sufficient numbers to give the sand a noticeably red color. The beach pebbles and the sand are both washed from the bluffs of glacial drift by wave action. Pebbles from the shores of Lake Superior and the hills of the Copper Country and other places in Northern Michigan and Canada are easily identified on these beaches, and of necessity the sand has the same origin. In either sand or pebbles great variety is to be found, and it is possible to find any material which is native to the great region between here and Hudson's Bay."

## INDUSTRY DEVELOPING POTASH DEPOSITS

(*Continued from Page* 273)

phosphate, sodium phosphate and ammonium phosphate. Calcium phosphate is used to fortify bread, in baking powder, and for the direct treatment of soil. Normally used as a water softener, sodium phosphate has wide use in soaps and detergents. Ammonium phosphate is used in ammoniated toothpaste and in fireproof fabrics.

After discovery by the U. S. Geological Survey in 1910, no real effort was made to develop the Melrose field commercially until 1947 and 1948. During those years, the Anderson Phosphate Mines, Inc., and the Martin Phosphate Mining Company acquired land leases in the Maiden Rock area. About 6,000 tons of rock on the Anderson property were mined but never sold.

The Victor Chemical Works became interested in the Maiden Rock deposit as far back as 1946. Private investigations were made and samples analyzed to determine the phosphate content of the rock and its suitability for use in an electric furnace.

The tonnage of phosphate rock mined in the United States during 1949 dropped from the 1948 record high of 9,388,160 tons to 8,877,474 tons. Decreases were shown in Florida and Tennessee, the Nation's largest phosphate producers, with an increase in the mining of western rock.

Idaho, Montana and Wyoming sold or used 826,474 tons during 1949. Of this amount, 355,169 tons valued at $2,574,330 came from Montana. The Montana Phosphate Products Company, Trail, British Columbia, has been Montana's largest producer. It operates three mines in the Garrison ditrict of Powell County, shipping rock to its plant at Trail.

Most of the Nation's phosphate rock goes into making superphosphate for the fertilizer industry.

### Enlists In U. S. Army

Gregory B. Benton, a subscriber from Hazardville, Conn., has enlisted in the U. S. Army and is at present stationed at Camp Polk, La. Pvt. Anderson expects to be shipped out to Japan the latter part of June. Prior to his enlistment, he was attending the University of Connecticut, Storrs, Conn., where he was majoring in mineralogy and geology.

### Hat's Off To R&M!

Editor R & M:

My hat is off to ROCKS AND MINERALS—unbeatable!

Oliver A. Mason
Ogden, Utah

March 5, 1951

# MINERAL SHOPPERS' GUIDE

**Conducted by CHARLES A. THOMAS**
706 Church Street, Royersford, Pa.

Earth Science studies and the collecting of specimens, requires a vast number of man hours. A percentage of these hours are spent in the field and the average collector will admit that, aside from the healthful benefits derived directly from the sun and fresh air, these joyous hours are but infrequently successful, insofar as great discoveries are concerned.

Of course, it depends on how easily one is satisfied. The M. S. G. has traveled many miles to visit famous localities only to find that specimens at some of these are now very much among the dear dead past. We are not all interested in microscopy, but those who are, usually find at least something of interest to take home as loot.

Several facts about collecting are evident. One of the most evident is that collections made up of entirely one's own field collected specimens are seldom of great interest to others. Who does not like to show others the results of his efforts? And further, who does not like to hear just a little praise and enthusiastic comment when the visitor views his display?

The dealer, who often spends every waking moment to improve his stock, spends good money advertising his wares, and so often bends over backwards to please new and old customers, can and does help the collector dress up an otherwise uninteresting display.

Another fact is that there are some very successful field collectors who become dealers—and often just for the kick they may get out of it. But these dealers soon learn that even their very fine assembly of specimen stock is not broad enough, hence they proceed to acquire fine specimens at wholesale from other dealers. This method of collection improvement should apply to the average collector. We urge you to contact the advertising dealer and when you do so, please mention your favorite magazine, ROCKS AND MINERALS. You will not only help keep the dealer in business, but also help to keep alive your magazine.

Dealers—if you have anything special for this department to mention, in order to help you and the buyer get acquainted, please just send a small sample of it to the M. S. G. Our personal examination will supplement your ad and at no extra cost to you. We feel that all the advertisers in this magazine are reliable dealers. We merely wish to help you and the buyer. Many collectors have not yet bought from dealers. We would also like to add that collectors who have not yet ordered fine specimens from a dealer are surely missing a great deal of real enjoyment. We should have some idea of what your ad will be for the July-August issue by the 15th of June with your sample of the special or specials.

A new advertiser, Coast Gems and Minerals, Inc., of 11669 Ferris Road, El Monte, California, whose first ad appeared in the last issue, were just a few days too late with their samples and ad (duplicate) to get it in the March-April issue. From their fine letter and samples sent in we know that the Coast Gems and Minerals, Inc., will more than please those who try them. The vanadinite, special last month, was sent in along with specials for the current issue ad, azurite, palm root and cloudy or plumed chalcedony. Their vanadinite compares favorably with the best the west produces. It is in fine lustrous crystals and in full color and at a low introductory price. Please don't miss it. The palm root slice and the samples of uncut root and chalcedony are in exquisite pattern and they are still being offered at get acquaintd prices. The azurite is also in full deep blue color and well crystallized. Why not get acquainted and send them an order The M. S. G. is sure the package will contain an additional surprise specimen.

Plummers, of 2183 Bacon Street, San

Diego 7, California, are old friends of the Magazine and its readers. Their 1951 list is a wow, with photo prints of specimens and row upon row of items dear to the heart of the mineral collector. Roy Plummer shows exceptional faith in his products and in the appreciativeness of his customers by offering a 'Memo Plan.' Simply order, select, and return what is not needed. New customers may send only a small deposit, sending the balance after the order is received and selections made. Roy is sincerely proud of his stock and we do not blame him. He sent us a most beautiful emerald in matrix from a Colombia, S. A., mine. Micro emeralds were also discovered on the matrix; so sharp and pretty. Plummer's specials appear in this issue as well as previous copies. Collectors—you just do not go out and pick up emeralds like these. Why not satisfy your urge to own some and send him an order?

We see, in the ads, that Ed Gilman is selling mineral specimens. Ed is the owner of the Lost River Caverns near Hellertown, Pa. When you visit the area, stop in and see his minerals and the cave. It is not often that cave owners are as mineral-minded as Ed Gilman.

Thanks to Arnold Dixon for his sample of black sticky tape. Mr. Zodac forwarded me your letter. We now have three varieties of the black tape for mounting narrow ribbons of sand. Ours is not the patience of a Leonard Morgan who mounts Herkimer "Diamonds" individually atop a black patent leather thumbtack. The forgoing probably does not belong in this column. Please forgive.

Mrs. Gene Belz likes her hammer emblem brooch pin from the Thunder Bird Hobby Shop. Lucy Dallavalle, have you ordered yours?

Philadelphia has been able to boast of but few mineral dealers in the past few decades in spite of the fact that so many fine students of earth science live within its boundaries and nearby. We tip our hat (though we seldom wear one) to Jaffe's Mineral and Lapidary Equipment Company, whose ads have appeared recently in these pages. This firm attempts to satisfy collectors who may be interested in any phase of mineral collecting. Their list of micro specimens is dear to the heart of the M. S. G. We know what they are and believe us when we state that they are beautiful. We used to ship these same locality specimen away back—remember? Jaffe's sell cutting material of the best and such famous lapidary equipment as Hillquist, Poly Products, Rock-A-Teer and Nelson's equipment. He recently obtained a small amount of pale green to white jadeite from Kotaki Gawa, Japan. This is a new locality for jadeite and as it is good material readers are urged to obtain a specimen while his supply lasts.

The older members of Rocks and Minerals Association will continue to note the handful of expert dealers who have continuously advertised in these pages. John S. Albanese is one of these who has long known how to gather the better mineral specimens from all over the world, to say nothing of his fine list of Franklin, N. J., and Paterson specimens. Although Mr. Albanese tacks a low price on his specimens, this, by no means implies that they are 'cheap' or 'nearly perfect' specimens. For instance, domeykite, a very rare metallic, these days, from Keweenaw Co., Michigan, is listed at from .50 to $3.00. From what the miners tell us, this interesting mineral is just getting too darned scarce. (Mr. Albanese is on a long-needed vacation in Wyoming and his ad does not appear in this issue.)

No doubt, many of us are watching for Burminco's ads telling us of the results of last year's collecting tour of the world. Such personally collected specimens from the far corners merit our close attention. Anything and everything that is any good at all will be offered for sale by the expert Burminco firm. They simply do not bother to ship back mediocre material. Cutters, and all sorts of collectors will be interested in the fine material personally selected from the best localities near and far. Watch Burminco's ads.

Claude A. Smith is a very enthusiastic

collector with a certain know-how so far as finding Herkimer "Diamonds" is concerned. He has made collecting in this famous area easy by writing a booklet on the locality and how to go about collecting these famous gem quartz crystals. He has sent us several fine 'diamonds', loose and in matrix and they are very lovely. Send him a buck and he will send you this interesting booklet, which you cannot do without, should you visit the localities in Herkimer County, N. Y. Look up his ad.

Cal Gettings seems to take up a lot of our time, but we love it. The M.S.G. simply must give credit where it is due. Cal is clever but he has not solved our spiders-under-the-porch problem. He is busting out with a new idea in presenting individual crystal mounts on neat plastic stands. Oh, it may not be that new, but his are so neat and very attractive—and cheap. Watch for his ad. Cal is apt to send you his choicest crystal as a sample to show you what the little stands are made for. He works for you for the love of it—profit may be a secondary consideration with him. We know that this is true.

Just before sealing this manuscript to be sent to Mr. Zodac so that he may proceed to form the May-June issue (deadline the 20th of April), we received a letter from Mr. Zodac which contained two very beautiful color slides sent to him by Mr. W. Scott Lewis of 2500 N. Beachwood Drive, Hollywood 28, California. After examining these slides, one of dufrenite and one of cinnabar in sulfur, fine color photographic slides of whole mineral specimens, we simply must urge those interested in using sets of slides for lecture illustrating, to get in touch with Mr. Lewis. He also supplies script that authoritively describes the sets. Sets of slides, in exquisite color may be had on a rental basis, for practically any scientific subject such as insects, trees, flowers, geology and mineralogy. Mr. Lewis is an old friend of many mineral collectors in this country.

## PECTOLITE NEAR NYACK, N. Y.

By PETER ZODAC

Pectolite is a white silicate generally found in close aggregations of needle-like crystals. Some pectolite, especially those found in the trap rock quarries at Paterson, N. J., are often so minutely thin and brittle that they are "dangerous" to handle; these crystals penetrate the fingers easily but are often most difficult to get out. Sometimes the fingers fester before the broken crystals are removed. Therefore—always handle pectolite very carefully.

Near Nyack, Rockland County, in southeastern New York, is an abandoned trap rock (diabase) quarry on Hook Mountain. Though the quarry has not been worked for years, its small "dumps" still show a few minerals of which pectolite is very common. The pectolite occurs as minutely thin radiating crusts, white in color, on diabase; sometimes the pectolite is associated with greenish prehnite. Colorless crystallized calcite can also be found. The finest mineral to occur here is stilbite which is found in good crystals, sheaf-like in form, pale brownish in color, in vugs in the diabase.

The locality is in the village of Rockland Lake about 3 miles north of Nyack. There are 3 or 4 quarries here (all abandoned); its the smallest and most northern of the group which contains minerals as nothing was found in the others. These quarries are now a part of Hook Mountain Park (Palisades Interstate Park System). All these quarries, which are close to the west bank of the Hudson River, are plainly visible from Ossining, 2¼ miles away on the east bank of the river. If you have occasion to use the main line of the New York Central Railroad, going (north) out of or (south) to New York City, look for the quarries on approaching Ossining. The quarries are directly opposite Ossining and are all plainly visible (especially on clear days). It is the smallest and most northern quarry which contains pectolite and other minerals.

# THE WELSH MUSEUM OF NATURAL HISTORY

## 170 WYCKOFF AVENUE, RAMSEY, N. J.

Wilfred Welsh, fifteen year old naturalist, sat in his one room attic museum looking at his exhibits and dreaming that one day he would share his love for natural science with others. That dream is now a reality. Today Bill teaches science in a local high school and is the popular advisor of a live-wire mineral club. The attic museum of his childhood has been replaced by a small but extraordinarily complete natural history museum to which Bill generously arranges personally conducted tours for science classes of the local schools. Fired by enthusiasm after such a visit, one student tells another about the wonders to be seen there so that the little museum is often crowded with enthusiastic youngsters who come of their own volition. Many of the students, inspired by what they saw at the Welsh Natural Science Museum, have started collections of their own and become active field naturalists. Some have chosen careers in one of the natural sciences.

Bill's wife, Mary, a botanist and ornithologist in her own right imparts the family love for nature to younger children in her classes at the local grammar school. Her active cooperation has helped Bill further his dream.

In the basement where a bare minimum of space is given to a heating unit and a laundry, there are three small rooms full of glass cases of various sizes and descriptions housing interesting specimens.

The mineral collection is the largest exhibit, with specimens being arranged according to the predominant metal. The West Paterson collection is a fine one; most of the specimens being personally collected during Bill's college days when pickings were better.

The Franklin collection of crystal groups would do credit to any of the great museums in this country. A whole case is devoted to fluorites and an array of fluorescents lines one wall.

Copper minerals which are always beautiful, with the lead, zinc, iron, uranium and aluminum minerals to mention a few, are also on display. The collection includes many foreign countries, some visited by Bill during his G. I. days.

There is a very interesting fossil collection next to a collection of rocks. Indian artifacts and pottery, both prehistoric and modern fill four cases. A diorama of a Florida coral reef with its varicolored corals, fishes, sponges and crabs, patterned after one in the New York Museum of Natural History and prepared by Bill Welsh, makes a colorful exhibit. There are birds eggs from an old collection, nests, bird skins and mounted specimens to give the ornithological touch. Skulls from the size of the lion and tiger to that of a mouse share a case with preserved specimens. There is an octopus collected on a trip to Florida beaches, a human embryo given by a medical visitor, and an alligator skin nearly thirteen feet long

There is a fern collection from India donated to Bill by the father of one of his students, a missionary.

The case of butterflies and moths are breathtakingly beautiful as is a native bark skirt from the Bora Bora Islands in the Pacific given by two members of the Newark Mineralogical Society.

Wilfred and Mary Welsh are members of the friendly active Newark Mineralogical Society and thus their collection is continually growing. Visitors leave full of enthusiasm trying to think what they can contribute to this interesting and inspiring little museum.

Gerry and Will Shulman
113 Huntington Terrace
Newark 8, N. J.

Photograph by Gavin P. Taylor

Photo by Gavin P. Taylor

**Mr. and Mrs. Wilfred Welsh and a corner of their museum.**

# ZINC DEPOSITS IN EAST TENNESSEE

By W. M. JOHNSON
R.F.D. No. 6, Knoxville, Tenn.

In East Tennessee there are many deposits of zinc ores to be found. Most of the deposits are small, but there are two areas where the deposits are of considerable size. It is possible that later propecting methods will develop other areas.

The Valley of East Tennessee is a part of a folded and faulted area extending from Alabama through Virginia, the underlying strata of which is Paleozoic. There are many parallel ridges of very uniform height, some extending for almost a hundred miles, and there are, here and there, smaller ones jutting out from the sides of these. The valley drains to the southwest and to the northeast from a point near Abingdon, Virginia.

In 1924, Mark H. Secrist, in "Zinc Deposits of East Tennessee," reported on fifty-eight prospects. In several locations, the mines were large enough to justify erection of mills, and in others, mills were built without proper prospecting and testing of the ores. Forty-two of the prospects were in strata that dipped southeastward, while five were in strata that dipped to the northwest. The largest and only producing area at present is the Mascot-New Market-Jefferson City area, which is seventeen miles in length and probably not over four miles in width. The ore is lean, and large quantities are available and can be handled on a profitable basis. The American Zinc Company has prospected their holding very thoroughly, blocking out mining zones by use of magnetic methods, churn drills, and diamond drills. The results are studied by their geologists before any mining is started.

At the time the valley was being formed, the deposits of limestone and dolomite were subjected to great pressure from the southeast, resulting in much crushing and many faults, with the exposure of many of the underlying layers in the parallel ridges. The ore seems to have been deposited in most cases by ascending hydrothermal solutions circulating through the fractured and brecciated areas. Crystalline dolomite and the minerals have sealed the areas between the crushed material.

The minerals found in the rock in most of the prospects are:

| | |
|---|---|
| Sphalerite | Hematite |
| Pyrite | Dolomite |
| Chalcopyrite | Chert |
| Galena | |

Manganese ores are found in the joints in some cases and melanterite in the Straight Creek Mine.

In the clay overburden, which is usually heavy, the miners expect to find the following minerals:

| | |
|---|---|
| Smithsonite | Greenockite |
| Hydrozincite | Limonite |
| Calamine | Barite |
| Cerusite | Fluorite |

The district's first work seems to have been at Jefferson City, where, in 1856, on Mossy Creek, zinc ore was discovered in quantity sufficient to be worked. Active mining was not begun until 1868. Various operations were carried on until 1919, when operations were halted. In 1926 further prospecting lead to the discovery of large underlying sulphide deposits extending to the southwest. In 1949 three major companies were working.

A few miles to the west of Jefferson City at New Market, open pits were worked in 1892 to reach the leached ores found on top of the bed rock. Active mining was carried on until 1913. In 1922 drilling developed a large body of sulphide ore, which is now being worked by the American Zinc Company. The ore is concentrated at Mascot. Two miles to the southeast, a mine was opened on Lost Creek in 1898 and was operated until 1922. This ore was very pure and commanded a price of $2.00 over the Joplin prices.

At Mascot, about ten miles further west, prospecting was carried on in the carbonate ores before 1900. The Rose-

berry Zinc Company operated the mine and a mill for several years, until The American Zinc Company bought the property in 1911 and gradually purchased other areas. This operation is the largest in East Tennessee and is working on ores averaging only 3½ per cent zinc. Their profitable operation is due to their foresight in blocking out the bodies of pay ore in advance of the mining.

On the Powell River in the New Prospect District, six prospects were worked between 1883 and 1918. Squires and Manning started the operations. The concentrated ore was shipped by barge to Clinton, Tennessee, where it was either refined or shipped. Part of this area is now flooded by the waters of Norris Lake.

Four miles west of Lone Mountain Station on the Southern Railroad, six prospects were opened, one of which was the Straight Creek Mine, which was opened in 1880 and operated until 1906. It was then idle until World War II, when the Universal Exploration Company reopened it, driving a new drift to strike the ore body. At some depth, ground water broke in, and the work had to be abandoned.

At Evanston, four miles southwest of Sneedville, considerable prospecting was done in 1916, and $400,000 was spent in prospecting and building a mill. After two weeks run, it was found that the mill would not handle the ore and the work was abandoned.

Copper Ridge, one of the long ridges which extends from Roane County into Virginia almost 100 miles, has ten prospects, none of which have been worked.

The Falls Branch District has five known prospects, which contained enough ore to justify the erection of a mill. In 1890 several deposits of barite were discovered, and soon after, zinc ores were discovered. The nearest railroad was at Jonesboro, eighteen miles away over several ridges, with hauling expenses very high.

Near Sweetwater, a great deal of barite is being mined from the residual clay soils of Knox Dolomite. Variable amounts of sphalerite, pyrite, galena, and fluorite are found with the barite.

Safford's, "Geology of Tennessee, 1869", mentions operations at that point and reports that galena in quantity and zinc blend have been mined near Charleston. There are many old diggings, but there has not been any recent development.

About one mile south of Cleveland, a mine was opened in 1892, which produced a large amount of galena and sphalerite, but the work here closed in 1906. Other prospects are to be found near Greenville, Watauga, Friendsville, Eve Mills, and Sevierville, but no amount of ore has been recovered.

Between Dandridge and Leadville, there is an opening that was worked during the Civil War for lead. There is some zinc, but no recent operations have been successful.

At Embreeville, mining was done for iron, but zinc carbonates were soon discovered. Mills have been operated from time to time, but all operations have been closed at the present time.

**References**

Zinc Deposits of East Tennessee, Mark H. Secrist. Tennessee Div. Geol. Bull. 31, 1924.
Symposium on Mineral Resources of the Southeastern United States. 1949 Proceedings. Univ. of Tenn. Press.

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**Congratulations From Subscriber!**

Editor R & M:

I have just finished your article on the trip to Rochester, N. Y., and find it as enjoyable as other similar ones. They are written in a style that is not like any other but give a clear and interesting picture such as few travel articles do. I congratulate you on these articles.

Dr. H. J. Swann
Pauling, N. Y.

April 12, 1951

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**Best Ever Read!**

Editor R & M:

I think R & M is one of the best I ever read. I surely enjoy every copy. Only wish it was a monthly.

Harold P. Post
Chesterfield, N. H.

March 31, 1951

# EDWARD CLARK FOSTER, TEACHER AND GEOLOGIST

By SARAH R. ADAMS
Williamsburg, Mass.

The proprietor of a Stamford toy store happened to see a small boy walking out with one of his new bicycles. He went up to the boy and tactfully asked him what was the idea of walking out without paying for it. The reply was, "Oh, you just tell Daddy, you speak to my Daddy about it. He'll fix it. He'll pay for it."

This self-assured little boy's ancestors were the Fosters, who came to America with the Puritans in 1628. They settled on Long Island, and, being Fosters, they were well liked and of course were honest. The head of one of the Foster families was town treasurer during the Revolutionary War. When the British Regulars came through the town, they stopped at his house and with their bayonets beseiged the desk that held the money. The bayonet marks may still be seen today—a hundred and seventy five years later—but the Regulars never got the money!

EDWARD CLARK FOSTER

The branch of the Foster tree in which we are most interested went from Long Island to Stamford, Connecticut, around 1700. Edward Clark Foster, the son of J. Clark and Antoinette, was born in that city on March 17, 1907. One day. when he was about three, his father told him that he had a little baby brother. Immediately the youngster ran out of doors and told everyone he met, "I've got a little brother and IS she cute!"

Eddy, as he was called, attended Stamford public schools with his brother Malcolm until 1915 when the family moved to Williamsburg, Massachusetts. Again he went to public school, and entered "Burgy High" in September, 1921. Eddy was always full of fun. For instance, he always wore an orange tie on his birthday, St. Patrick's Day, just to tease his Irish Latin teacher.

Sports, baseball and basketball in particular, drew his attention. We all remember him as a good athlete and a fine sport. He was quick to take hints, very cooperative, and always full of fun. One day, in the fall of 1924, a senior suggested that they skip school and go to Cummington Fair. Cummington is a small town in the Berkshires about thirteen miles away. Therefore, at noon, instead of returning to classes, they all gathered at the bridge—out of the principal's sight I might add—to wait for their chauffeur. When young Edward arrived with his Velie car, they all piled in and were ready to go. Then one girl thought she must go home for her rubbers. So back they drove to her house which was in sight of the school. The principal spied them. The consequences were dreadful—a lecture, and failure to go to the Fair! Even though the Velie was a good car, his father discovered a broken spring once or twice a week and was much puzzled. It was some little time before he realized that Edward was taxiing fourteen or fifteen young friends in the car!

Nineteen-twenty-five brought graduation to thirteen Williamsburg students,

among them Edward C. Foster. As each student "leaves the fold" to commence his journey of life, there is gaiety in the air. and yet a sad note of parting seems to be present. Eddy went to Amherst, to the University of Massachusetts for a year. In 1927 he entered Clark University at Worcester, Massachusetts. While on a field trip with Dean Homer Little and his classmates, he found a granite rock about twelve by eight inches. Cracking it open, he found, to his profound joy, an aquamarine an inch and a half in diameter. It was of no great value as a specimen, nevertheless it stimulated his interest in mineralogy.

Learning about the geological strata brought Edward's interest to the surrounding section. Clark did not have an adequate map showing the topography of the area. So it was Ed to the rescue once more. I don't know how many times I have heard him say: "If anything is lacking or out of place, it's up to you to fix it because, don't worry, the other fellow isn't going to." When he had finished, the University had an adequate map—a relief map size six by four!

His extreme interest in mineralogy led him to the school museum where he completely rearranged the mineral exhibits.

Once again Edward Clark Foster became an Alumnus, but this time of Clark University at Worcester, along with the rest of the class of 1931.

After receiving his Master's degree in June, 1933, he came back to Williamsburg to teach in "Burgy High." When he began teaching here he was known as "Turk" by his pupils. Turk always taught all the sciences given plus anything else that could be squeezed in. He started a course in geology. but in a small school of seventy-five to ninety pupils not enough were interested to make it really worth while. During the one year the course was given, the class went on many field trips, learned quite a lot about the formation of this world of ours, and had a wonderful time doing it.

Turk was always most generous with his talents. He was musical; had begun music lessons when ten years old, played the trombone during his high school days, and at Clark often played the piano in programs. Here at "Burgy High" he often played during our Assembly programs. He even gave music lessons for a couple of years around 1945.

Although summers usually mean vacation for students and teachers, Turk was always busy. If some student hadn't worked hard enough during the year, had tried to cram for finals but just did not make it—sure, Turk would use his summer vacation to help out his pal. Even though he has spent many a summer tutoring, Turk never allowed anyone to take up all his time; he seemed to have a reserve supply of it in order to do all the things he did!

Around 1938 he founded the Hampshire County Geological Society. They went on a lot of field trips, to nearby towns and points of interest, and to some further away. They even went to Paris and Norway, (that is, in Maine). Most "Rock Hounds" have heard of the Barrus Farm in Lithia. Massachusetts. It is famous for its many different kinds of minerals. It is here that the collectors met for the first annual national meeting of the Rocks and Minerals Association at which Mr. Foster spoke on "Minerals of this Section." Dean Little, his teacher from Clark, came to hear his pupil, was very pleased, and complimented him.

Ed's interest in semi-precious stones began to show more than ever when he purchased a collection of cut gems from someone in Boston, in 1938. During the last two years he had been exchanging semi-precious gems, which he cut and polished himself, with people all over the United States. He had a few polished stones made into jewelry. Besides his gem collection he had a large collection of minerals and although it was purely an amateur's collection it numbered over a thousand. It is being given to Clark University.

The Wedding Bells began to ring in the fall of the next year, for it was October Eleventh that Edward Foster took Edith Derosia of Adams, Massachusetts. for his bride. They had gone on

many field trips together; both were interested in the town and especially in the young folks. Mrs. Foster has done and still does a lot of work with the local girls' 4-H group, especially when it comes to demonstrations.

During the summer of 1950, with some others, he worked in the rhodonite mine in West Cummington. The Eastman Kodak Company obtained a hundred tons of it, and if it proves worth while they may set up their equipment there.

As a teacher, his pupils—or "kids" as he would call us, thought him supreme. The class of Forty-four dedicated their year book to him. Gradually his nickname became "Doc." I don't know just how; perhaps because he was the one to call if anything went wrong. If a boy started to say something to his neighbor during study period, Doc was bound to come out with, "O-kay, Romeo and Juliet, guess I caught you this time!" He would make us turn scarlet. but we loved him all the more for it.

He taught the books but even more he told in his own words his own experiences. If he was in World Geography, he would tell of California and tease us a bit for being "so snooty about New England."

Last year Doc taught Local History. History can be a very dry subject, but not with Doc and his wisecracks! He told us, "Your town will be what you are today." How true that is!

Truly, Doc was the busiest teacher in the school. He taught Chemistry, World Geography, Physics and Biology on alternate years, Junior Business, General Science, Physiology, Local History and Drivers' Course. Also he was in charge of Audio-visual education, besides being Town Clerk since 1944. The other day someone said "Doc never had a free period, yet he always had free time for anyone who needed help."

When Doc was coaching the boys' basketball and baseball teams, around 1936, when Williamsburg was having her greatest success on the basketball court. he told them that it is the way the team plays a game, and not the outcome that matters most.

Doc had been suffering from heart trouble for sometime when he answered the call of the Supreme Umpire on November 28, 1950. He leaves his wife, Edith, and two sons, Edward Halsey, ("Sammy") aged eight, and Roy Clark ("Skipper") aged five; also his father, all in Williamsburg. Malcolm, his brother, is living in Carmel, California.

"It takes many types of men to make an ideal community. Some must soar high, some must blaze trails, some make the daily level fine and true. His daily living, his personal standards, his fair attitude towards all other men made Edward Clark Foster a noteworthy citizen."

**Acknowledgment**

I sincerely wish to thank Mr. J. Clark Foster, Mrs. Edward Foster and Mr. Alvin Barrus and all others who have contributed so generously of their time and effort to make this contribution possible.

## ORCHARD HILL HEMATITE

In her article "More Notes on Orchard Hill, Elmsford, N. Y." (March-April, 1950, R & M), Miss Evelyn Waite mentioned our discovery of an occurrence of hematite at the locality but she couldn't explain how it came to be there.

Several months ago I chanced to be at Orchard Hill when a group of men with power shovels were removing rock to be used as fill for an outdoor theater. The man in charge of the operation saw me collecting and as he seemed to be interested, I mentioned some of the minerals I had found there and told him of our hematite find. He offered an interesting explanation of the hematite occurrence. He explained that the power shovels had been purchased at Green Bay, Wisconsin, and that local hematite had been used as ballast in them during their transportation to New York. The hematite was then dumped at Orchard Hill to be discovered later by Miss Waite and myself on one of our trips to the locality.

Miss Guenever Pendray
491 Westchester Avenue,
Crestwood (Tuckahoe), N. Y.

# CLUB AND SOCIETY NOTES

**Attention Secretaries**—If you want your reports to appear in the July-August issue, they must reach us by June 15th—The Editor.

### Cincinnati Mineral Society

The regular monthly meeting of the Cincinnati Mineral Society was held Wednesday, January 13, 1951, at Wilson Auditorium at 8:00 P. M. This meeting was a joint meeting of the Cincinnati Mineral Society, the Dry Dredgers and the Geology Dept. of the University of Cincinnati.

Cincinnati experienced its worst sleet and snow storm on this evening which of course had adverse effects on the attendance at this meeting. Despite this condition some 75 members of these groups were in attendance, and the meeting was a success in a small way.

Dr. Rich of the University Geology Department presided over this meeting. Mr. E. H. Sarles, President of the Dry Dredgers and member of the Mineral Society introduced the speaker.

The speaker for the evening was Dr. John H. Melvin, chief of the Ohio State Geological Survey. Mr. Melvin spoke effectively and at some length describing Ohio's mineral resources. He spoke of the Survey's work in Ohio. He spoke further of the bearing of this work upon Ohio's people and mineral industries. We were treated to an insight on the Survey's place in the national picture as concerns geologic survey work.

Mr. Melvin supplemented his talk with an excellent color-sound film entitled "Ohio and Its Mineral Resources." This film was the product of the work of the Survey and Standard Oil of Ohio. The result was a fine meeting and adequate reward for those persons who engaged in its planning.

### February Meeting

The regular monthly meeting of the Cincinnati Mineral Society was held February 28, 1951, at the Cincinnati Museum of Natural History.

Mr. Ralph Clark, President, opened the meeting with a welcome to a number of guests. We were pleased to have as our guests, Mr. Howard E. Jackson of Cloquet, Minnesota, Dr. and Mrs. Gerald M. Friedman of the University of Cincinnati Mineralogy Dept., Mr. and Mrs. Harry Wilke of Dayton, Ohio.

The meeting this evening was devoted to a discussion by members of their favorite specimens.

Mr. Howard E. Jackson gave us a brief but interesting talk on his collecting activities in Minnesota. We are indebted to him for showing his wonderful collection of fine cut agate material. Mr. Jackson introduced us to the newly accepted mineral "Binghamite" which is quite interesting and very beautiful.

Mr. Edgar Sarles spoke on a specimen of stilbite from Moores Station, New Jersey, which had for him some early collecting recollections.

Frank Atkins covered beryl from "Collins Hill, Connecticut; Herkimer "Diamonds," a fine pyritohedron from Salt Lake City, Utah, calcite with marcasite and sphalerite from Joplin, Missouri.

Mrs. James Fox discussed a fine amethyst from Red Feather Lake, Colorado, which she had received from her mother-in-law. This represents long last acceptance of Mrs. Fox and her "Rocks" by her immediate family.

Mr. Ralph Clark discussed finding some box-like casts of calcite found by him in the Wind River Canyon near Buffalo, South Dakota. Also another interesting specimen of distinctly banded sandstone showing faulting was discussed.

A general discussion among the member followed adjournment of the formal meeting.

Charles L. Gschwind, Sec.
6931 Diana Drive
Cincinnati 24, Ohio

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### Chattanooga Rocks and Minerals Club

A meeting of the Club was held on February 13, 1951, at 7:30 p.m. in Room 108, Brock Hall, University of Chattanooga, Chattanooga, Tenn.

The program was a double feature. Col. D. N. McMillin took the first part in which he briefly outlined the geologic eras: Archean, Proterozoic, Paleozoic, etc., and pointed out the place historically occupied by the Chattanooga area. He pictured the time element in an unusual manner.

He was followed by Prof. B. K. MacGaw, who discussed in detail the local geology, taking up each formation and describing its characteristics. The sequences were clearly shown in the mimeographed sheets he distributed. With this information one could drive up our local mountains and pick out the various formations during the ascent.

### March Meeting

A meeting of the Club was held on March 13, 1951. The program was devoted to sand. George C. Olmsted, by means of projections, showed enlargements on the screen by both transmitted and reflected light. The specimens illustrated were from Asia, Africa, Europe, Iceland, South Pacific Islands as well as this country, and included various sands such as fossil, monazite, turquoise, zircon, and garnet as well as technical sands.

George C. Olmsted, Programs
1129 James Boulevard
Signal Mountain, Tenn.

### Los Angeles Lapidary Society

Mr. Armand De Angelis, famed gem cutter of the Krueger Stone-House, gave the members of the Los Angeles Lapidary Society much good advice on the art of cutting stones at their April meeting. Mr. De Angelis has been a professional lapidary for the past 25 years and has cut custom stones for a great many of Hollywood's movie stars—earrings for Hedy La Marr—a 375 carat Topaz for Joan Crawford etc., (nice work if you can get it).

It was gratifying to hear Mr. De Angelis confirm the hobby gem cutters' point of view that the amateur lapidary does not trespass into the professional gem cutters field but rather increases and helps his business. We have always contended that that is the case.

Mr. De Angelis told us that most of the older gem cutters use the "jam peg" and that many of them prefer to continue to do so, but many like himself are ready and willing to discard old methods for newer ones if the new way proves to be a better and easier way. He stated however, that in recutting a faceted stone the "jam peg" is more adaptable than a rigid facet head and in cutting stones for less loss of rough material the "jam peg" has its place. Therefore the amateur as well as the professional could well learn the principles and techniques of this early faceting device.

Mr. De Angelis gave us many hints that would help us to improve our cutting methods. "For example," he said, "Never force a cabochon into a grinding wheel. Go with the direction in which the wheel is turning. Keep the stone moving and don't stay in one spot on the wheel.

"Use a double 'F' buffer for smoothing your cabochons and make your cabs symetrical and round, and avoid flat spots on the surface. Half a sphere brings out the effect of the star stone to its best advantage and even higher than one-half is good for star sapphire.

"If you polish jade with green jade powder, which I think is one of the best polishing agents for that material, keep your leather buff roughened a little by rubbing it with sandstone occasionally.

"On polishing faceted stones you will find that a lap of copper, tin type or rolled zinc charged with polishing diamond dust will not polish as well when it is new as after it has been used for quite a long time. When it becomes well broken in take good care of this lap.

"In polishing rutile I sometimes make a preliminary polish on a diamond lap before going to the final polish."

Everyone enjoyed Mr. De Angelis' informative lecture.

President Norman Cupp announced that the exhibit of the Los Angeles Lapidary Society at the Third Annual California Hobby Show was attracting huge crowds and making many friends and pebble pups. The working demonstration of Mr. Charles Maples and Mr. Jack Deurmyers' of lapidary equipment won the Special Awards ribbon for that class and the society's display of lapidary work, gems and jewelry "copped" the blue ribbons for that division. Mr. Maples and Mrs. Thelma Thomson were co-chairmen of this event.

Mr. S. P. Hansen, charter member of the L. A. L. S. became the first member to be presented with the society's highest honor a Life Membership.

The Los Angeles Lapidary Society meets on the first Monday of each month in the Van Ness Playground building at 2nd Avenue and Slauson. The Faceteers (a branch of the L. A. L. S.) meet on the third Monday at the same location. Visitors and out-of-town rockhounds are always welcome.

Vic Gunderson, Cor. Sec.
2152 W. 83rd Street
Los Angeles 7, Calif.

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### Form S. E. Iowa Mineral Society

March 9th at the home of Earl Smith., New London, Iowa, a group of interested persons met to form the Geode Rocks and Minerals Society of Southeastern Iowa. Officers elected were: E. N. Smith, President; Raymond Colton, Vice-President; Earl Smith, Secretary-Treasurer.

Directors—Dr. E. J. Wehman, Burlington; Harvey Morrow, New London; Hamp Shook, Mt. Pleasant; and William Mathers, New London.

Articles of organization were adopted and persons from Henry, Des Moines, Lee, Louisa and Jefferson counties will be eligible for membership in the organization.

E. N. Smith said there has been a general interest in rocks, gems and minerals found in these counties for many years and this will give people interested to meet in a group and discuss and gather information of geological formations and at the same time enjoy a hobby with persons interested. Persons interested in joining may contact Earl Smith, secretary. The first regular meeting will be held in June. Societies of this type have been formed for many years in many states. This area with the most beautiful and unusual geodes in the world should reveal to the nation through an organization the many opportunities to study this popular rock.

Charter members are:

E. N. Smith, Mr. and Mrs. Earl Smith, Mr. and Mrs. Raymond Colton, Mr. and Mrs. William Mathers, Mr. and Mrs. Harvey Morrow, Mr. and Mrs. C. L. Jennings, Mr. and Mrs. David Calloway, Mr. and Mrs. E. E. Wessel and Mr. and Mrs. R. C. Eckey all of New London; Mr. and Mrs. Ralph Mills, and Frederick Crane, all of Mt. Pleasant.

Dr. E. J. Wehman and Miss Donna Johnson, Burlington.

Mr. and Mrs. Hemp Shook, Mt. Pleasant.

NEW LONDON JOURNAL, New London, Iowa, Thursday, March 15, 1951

### Georgia Mineral Society

Quarterly activities of the Georgia Mineral Society have been of varied interest and instruction to members and visitors. Dr. H. W. Straley, President, announced at the January meeting the formation of two new subsidiary societies—the West Rome Rock Club and the Cedartown Mineral Society. Dr. Horace G. Richards described his visit to the French Islands of Saint Pierre and Miquelon. Dr. Richards, an honorary member of the Georgia Society, is affiliated with both the University of Pennsylvania and the Academy of Natural Science of Philadelphia. He gave an enlightening account of the Islands' history and location—in the Gulf at the mouth of the St. Lawrence River about fifteen or twenty miles from Newfoundland. Their principal industry is codfishing and Dr. Richards' kodachrome slides showed Saint Pierre's stony fields literally covered with codfish. Dr. Richards said the glacial history of the Islands showed no evidence of marine life and that they were not of marine submergence.

The February meeting was combined with the Gem Section session. The speaker, Mrs. J. N. Donaldson, was introduced by Nelson Severinghaus, Gem Section chairman. Mrs. Donaldson discussed the purple and lavender gem stones, their connection with mythology and ancient history, and exhibited her unique collection of amethysts in antique settings. Members having gems of the two colors brought them along for display to the more than 100 members and visitors in attendance. Dr. A. S. Furcron, assistant state geologist, described the localities in Georgia where amethysts have been found. He mentioned, among other places, Rabun, Towns, and Habersham Counties. Mr. M. W. Parker, of Madison, brought some large clusters of amethyst crystals he had recently mined on his property in Morgan County. He had with him a particularly attractive specimen which was featured in color on the cover of the Atlanta Journal-Constitution for February 18.

At the March meeting, Dr. Frank Daniels, charter member of the Georgia Society and one of its principal founders, showed kodachrome slides of Georgia minerals made from pictures taken on former field trips. His collection of beaded necklaces made of common Georgia minerals were a revelation to newer members of the group who had not visioned such interesting possibilities with quartz, jasper, chert, and other Georgia rocks.

Dr. Russell S. Poor, chairman of Oak Ridge Institute of Nuclear Studies, spoke at the April meeting on the radio-active minerals. He discussed the unusual ones as well as those which are better known and exhibited colorful specimens of uranium ores. Dr. Poor brought with him Dr. Rohner of the Oak Ridge Institute staff who described some of her work with atomic minerals. She is currently engaged in testing sands from the bottom of the ocean to determine their uranium content. Dr. Rohner, a Viennese scientist of outstanding ability, charmed even the junior members (the ten year olds) with her too brief account of some of the activities at Oak Ridge.

Erna L. Mason
State Health Dept.
Atlanta, Ga.

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### California Hobby Show

More than 100,00 persons attended the 1951 California Hobby Show at Shrine Convention Hall, Los Angeles, Calif., from March 30 through April 8, it was reported by Fred J. Tabery, managing director.

Attendance figures more than doubled last year's total and more than tripled that of the first year, Tabery said. Public and private school teachers and leaders of all major youth organizations were particularly enthusiastic and gained many ideas to incorporate into their programs.

"We are assured from all sides that the annual Hobby Show has a definite place in our community life from the standpoint of education, as well as entertainment," Tabery declared.

Visitors from just about every state in the union attended the $3,000,000 show which featured more than 50,000 individual objects in some 350 exhibits covering 56,000 square feet on two floors of the huge hall.

Exhibitors came from 34 states at their own expense.

Major exhibitors included the Pacific Coast Region of the National Model Railroad Association, Los Angeles Council of Photographic Clubs, Council of Radio Clubs, Los Angeles Philatelic Club, the Sky Kings and Sky Burners model airplane clubs, the Los Angeles Lapidary Society.

Other hobby fields represented in a big way were ceramics, arts and crafts, minerals, leathercraft, dolls and miniatures.

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### Tucson Gem & Mineral Society

The Tucson Gem and Mineral Society met in Room 110 of the University Library on the U. of A. Campus, February 6th. Mrs. Gladys Babson Hannaford gave a most interesting address "Diamonds from the Ground Up," illustrated with pictures taken at the African mining areas. Mrs. Hannaford showed crystal models of the most famous large diamond as well as specimens of these ores. On February 20th various members gave short talks on silver mining, showing specimens of these ores. March 6th, Mrs. A. Murchison addressed the Society on "Whys and Wherefore of Mineral Names," giving a most comprehensive and interesting coverage of the subject, after which there was a general discussion of garnets by those present.

David P. Record
4400 Mission Road
Tucson, Ariz.

### Yavapai Gem & Mineral Society

Aerial photographs of familiar territory would be of value and interest to all rockhounds, said Hugh Hughes of New Jersey Zinc Exploration Company during his talk before the Yavapai Gem and Mineral society Tuesday night, March 6, 1951. The group met in the Fagerberg Civic Center, Prescott, Arizona, to hear Hughes' illustrated speech on the application of aerial photography to geology. The speaker was assisted by S. E. Jerome and W. P. Johnston, also of the New Jersey company.

For their purpose of mining exploration, Hughes explained, his company makes use of stereoscopes of various designs to bring the photographs into the third dimension. Thus a reasonably accurate interpretation of the territory seen from the air can be obtained with the various shadings, water drainage and prevailing characteristics determining the type of land.

Vertical photographs are taken for their use, Hughes said, but stereoscope projection is necessary for full understanding. Oblique photographs are more interesting to the naked eye and more easily interpreted by the amateur.

A complete mosaic of the entire Prescott national forest area was highly interesting to the club members and guests, as well as the individual enlargements of territory in the near vicinity. Various stereoscopes were set up so the group could readily see the third dimension brought out of the photographs.

Door prizes for the evening were won by Miss Marie Kuhne, and Dick Manley, junior.

### April Meeting

Identification of minerals with a petrographic microscope was expertly described on April 3, 1951, by S. A. Jerome at the Yavapai Gem and Mineral society meeting held in the civic center.

Jerome, who is associated with the New Jersey Zinc Exploration Company, used a blackboard to illustrate the complexity of the microscope and the necessity for duo prisms and 360 degree rotation in mineral identification.

He explained that minerals are identified by the physical characteristics, the chemical approach and the microscopic approach, which depends on optical properties but also combines the other two classifying methods.

Through refraction of light the microscope enables a person to classify and identify the mineral being studied. Spectacularly beautiful patterns and colors are revealed through the microscope.

Members of the Society had an opportunity after Jerome's talk to view a number of various slides and polished thin sections.

Door prizes for the meeting were won by Eugene Neuman and Gary Purviance, junior member. Gary also won the junior award in the quiz, with Henry Boehm receiving the senior prize.

New members introduced included C. W. Carter, Mr. and Mrs. H. M. Johnson and Mr. and Mrs. Hugh Vaughn.

During the evening members had an opportunity to purchase exceptionally beautiful specimens of fluorescent rock.

Mrs. Richard Humburg, Sec.
331 Park Avenue
Prescott, Arizona

### Pomona Valley Mineral Club

The regular monthly meeting of the Pomona Valley Mineral Club was held Tuesday Evening, March 13, in Room 8 of the Chemistry Building, Pomona College, Claremont, California.

The members were entertained by Mr. Walter S. Chamberlin, Chairman of the Southern California Grotto of the National Speleological Society. The method of cave exploration and equipment used were graphically described by Mr. Chamberlin. Hundreds of colored slides taken by flashlight were used to describe explorations of caves in the vicinity of Sequoia, Death Valley, Gowans Valley, Natural Bridge in Arizona, and others.

Underwater color photos of Cavern Streams and pools, taken by the speaker, were also shown, which closed an evening that held the audience enthralled.

### April Meeting

At the regular monthly meeting of the Pomona Valley Mineral Club, held in Room 8, Chemistry Building, Pomona College, Claremont, California, Mr. B. Cohoon was re-elected President to guide the destinies of the Club for another year.

The following officers were also elected: Vice-President, L. B. Penhallon; Secretary, Mrs. Marion Hillen; Treasurer, Mrs. E. Elizabeth Dillin; Director, Fred Kroger.

Mr. Heber Clewett was the speaker of the evening and his subject was "The Use of Quartz Crystals in the Radio and Electronics Field." Mr. Heber illustrated his subject with practical demonstrations of electronic apparatus, even tuning in Station WGW at Washington, D. C., for the Government time signals.

J. LeBrun, Pub. Chm.

### Western Nebraska Mineral Society

Regular meeting of the Western Nebraska Mineral Society was held Monday, March 5th, at Chappell, Nebr.

Arrangements were made for some society printing to be done and for a program yearbook to be organized. Otto Eineman and Alvin Rowedder were guests, Mr. Rowedder becoming a member of our society.

Luncheon was served by Mr. and Mrs. George Peterson.

At our next meeting, to be held at Sidney, Nebraska, we shall have the privilege of hearing Member E. P. Chipman, Ohio Oil Co., geologist, lecture on the geological history of Western Nebraska.

G. W. Brooks, Pub. Chm.
Chappell, Nebr.

### Newark Mineralogical Society

The 280th meeting of the Newark Mineralogical Society, March 4, 1951, featured a lecture by George Gerard Barton, Jr., on the "Ramifications of Radio-Activity and Radio Chemistry."

The lecture consisted of a discussion of the history of radio-activity showing its discovery was the direct result of the discovery of X-ray. The lecture continued with a discussion of the nature of radio-active radiations, their properties and causes. Radio-chemistry and the development of the radio-active series was presented as a prologue to the discussion of the separation and purification of Radium and Polonium by the Curies.

Trying to keep on a layman's level the lecture turned to a discussion of widely separated points on the road to present day understanding of the world of the atom. The lecture was concluded with an explanation of the Fission or A-bomb and the Thermo-nuclear or H-bomb.

There were questions presented by the audience on radio-activity, dwelling on the effects and limits of radiation on the human body.

The lecturer exhibited at this time several beautiful specimens of gummite, uraninite, pitchblende and autunite loaned to him by several members of the society. These specimens were put before a Geiger counter to demonstrate the radio-activity of the uranium. thorium, actinium and the newest, the neptunium series were also displayed.

### February Field Trip

On Saturday, February 24th, 1951, the Newark Mineralogical Society went on a field trip to the Welsh Museum of Natural History at 170 Wyckoff Avenue, Ramsey, N. J.

Wilfred and Mary Welsh, active members of the Newark Mineralogical Society, showed us through their small, but extraordinarily complete natural history museum which featured a beautiful collection of minerals.

Our hostess served hot beverages and homemade cookies to all members before we left.

We came away full of enthusiasm, trying to think what we could contribute from our collections to the curators of this interesting and inspiring little museum.

Gerry and Will Shulman, Co-Chm.
Publicity Committee
113 Huntington Terrace
Newark 8, N. J.

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### Club Wanted For Danville, Ill.

Rev. John E. Sparks, 106 W. Woodbury St., Danville, Ill., is interested in forming a club in his city. A recent letter from him states "I'd like to get a club started somewhere in the vicinity of Danville, Champaign, or Terre Haute."

All readers residing in the Danville area and who may be interested in a mineral club, are urged to contact Rev. Sparks and give him their support.

### Contra Costa Mineral and Gem Society

The Contra Costa Mineral and Gem Society has installed its new officers for 1951. Ed Ross of Walnut Creek, President; Lynn Hulse of Concord, Vice-President; and Bill Wight of Walnut Creek, Secty-Treasurer.

Twenty-five members went on the field trip of February 24th and 25th, down below the Big Sur to Mill Creek, Calif., looking for Monterey jade. This location is along a pretty rugged bit of coast and it is reported that nearly everyone got ducked either by being caught by a big wave or pocketed against the cliffs by the incoming tide. Ed Ross worked his way back up one of the canyons and had an argument, over one piece of jade, with a Bob cat. It was nip and tuck for awhile as to whether Ed would try and crack the junior lion's skull with the jade or save it for cutting in more peaceful surroundings. Ed says the cat finally decided it was the most scared and retired. Anyway Ed came back to where the crowd was and with the jade.

Some of the members got some jade, some got serpentine and some brought back a nice load of country rock which looked pretty dead after it dried out.

The regular meeting of March 9th was well attended. Glenn E. Daniels, a member of the East Bay Society, who is with the Cooperative Snow Investigators for the corps of Engineers, was the speaker of the evening. Glenn showed some nice slides and spoke on "Water as a Mineral."

A. E. Davies, Pub. Chm.
Alamo, Calif.

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### Humboldt Gem and Mineral Society

The monthly meeting of the Humboldt Gem and Mineral Society was held March 30, at which time over 72 members assembled to hear Mr. Newton Steward, chief of the K. I. E. M. News Staff give a most outstanding talk about his experiences in China. His unique display, dating back 2,000 years to the Han Dynasty, gave a revealing history of Chinese Art. The talk was thoroughly enjoyed by all.

Paul McMillan gave a resume of a field trip taken by members to the Van Dusen River Area. Refreshments followed the conclusion of the meeting.

April 1st, about 29 members of the Humboldt Gem and Mineral Society took part in a trip to the beaches of Dry Lagoon and Big Lagoon in northern Humboldt County, Calif., according to Field Trip Chairman Paul McMillan. Agate, jasp-agate, petrified wood, califomite and jasper were some of the minerals found. After a midday picnic lunch, the rock hunting was resumed.

Mrs. Clory Drake, Pub. Chm.
Eureka Jr. High School
Eureka, California

### North Jersey Mineralogical Society

It was with a note of sadness that the 63rd meeting of the North Jersey Mineralogical Society was called to order by the President, William B. Aitken, on March 8th in the Paterson Museum. The president announced the passing of one of the charter members of the society, George E. Hauze.

Up until a year or so ago, Mr. Hauze had been actively collecting minerals throughout New England and the Middle Atlantic States, where he made many friends.

He was, also, a member of the New York Mineralogical Society and of the New York Microscopic Society.

Born in Black Creek, Pa., he had resided in Paterson and worked in the Wright Aeronautical Corporation for many years. When the North Jersey Mineralogical Society was formed in 1945, he became an enthusiastic member and planned many of our field trips. He was a quiet, unassuming gentleman, interested in all outdoor life as well as in minerals, and will be greatly missed in our Society.

The speaker of the evening was Dr. Frederick A. Stenbuck of Mount Vernon, N. Y., who gave us a splendid talk on "Collecting in Mexico." As Dr. Stenbuck is interested in both minerals and archaeology, the members of the Minsi Archaeological Society, connected with the Paterson Museum, were invited to meet with us.

Dr. Stenbuck's address was illustrated with Kodachrome slides.

He conducted us from Laredo, Texas, through Mexico to the State of Oaxaca and back through Mexico City and the volcanic region, passed Paricutin and north again to the U. S. border. He described bits of the life of the Indians and Mexicans by word and pictures and showed many interesting ruins of ancient civilization. He visited many noted mineral locations, including the Silver Mines and the opal district.

Following the pictures Dr. Stenbuck entertained us with stories and explanations of the "treasurers" on exhibition, which he had collected on his two trips throughout Mexico.

Miss Florence C. Hight, Sec.
169 E. 21st Street
Paterson, N. J.

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### Pacific Mineral Society

February was a busy month for members of Pacific Mineral Society. First the field trip with Willard R. Culver, staff photographer of the National Geographic Magazine. Saturday was spent collecting specimens of ulexite, cottonballs, zeolites, bloodstone and lapidary members put in a lot of hard work digging out howlite in large nodules for making slabs and bookends. Camp was made for the nite near the Borax mine in Tick Canyon, Calif., Around the camp fire were fifty members representing seven different societies of southern California. Several other societies were in the group during the day but did not stay for the campfire. Still others arrived Sunday morning to go to the second location north of Mojave. While enjoying the campfire Mr. Hulburt of the Los Angeles Mineralogical Society gave a talk about the section (it is part of the San Gabriel Range) telling how the formations had slipped, forming the canyons and bringing the borax minerals to the surface.

The second field trip of the month was to the Cinco section to collect Carlsbad Twins and Quartzoids.

The officers for the new year took office and annual reports were given. Pacific Mineral Society has 92 members and during the year enjoyed talks about rare earths, geodes, tungsten, minerals collected around the United States, and boating down the Colorado River; many talks were illustrated by colored slides.

Field trips taken during the year included nearby visits to members homes and the beach of Palos Verdes to Lake Mead where over a thousand cars met from all directions in the southwest section.

Myrtle M. Musselman
26327 Athena Avenue
Harbor City, Calif.

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### Lapidary & Gem Society of New York

In our short span of existence we have already established a workshop of our own at 504 E. 12th St., New York City. We have also put an exhibit on display at the American Museum of Natural History (New York City) of the members' work in the lapidary and jewelry art.

We meet on the 2nd and 4th Monday evenings of each month.

John W. Cole, Secretary
40-66 Ithaca Street
Elmhurst, N. Y.

(An honory membership in the Lapidary and Gem Society of New York has been accorded the Editor of ROCKS AND MINERALS).

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### Tucson Gem and Mineral Society

On March 20th, The Tucson Gem and Mineral Society met in the University of Arizona Library, on the campus. An interesting talk by J. J. Normart Sr., on copper minerals was given with a movie upon the smelting and mining of copper at the Inspiration Mine at Miami and Globe, Arizona. Mr. Normart had a very large collection of copper minerals from various locations near and far.

On April 3rd, Mr. Fred G. Hawley gave a talk upon Meteor Crater in Arizona. Specimens were shown of the different types of meteors.

On April 17th, two excellent movies were shown on the natural resources of Chile and Columbia. The commentary that went with the movies were very enlightening and should go far on improving our relations with South American Countries.

David P. Record
4400 Mission Road
Tucson, Arizona

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### Chicago Rocks and Minerals Society

The speaker at the April meeting of the Chicago Rocks and Minerals Society was Professor Richard Cole of Northwestern University whose subject "Watch Cases of the Early 1800's" was illustrated by excellent colored slides of the elaborately enameled and jewel encrusted cases from the collection of Leopold Metzenberg.

Member exhibits included Stanley Ryba's unusually fine collection of Pennsylvania Fern fossils; cabochons and jewelry, including a very clever bracelet whose musical score design contained the notes for "Happy Birthday to You" by Mrs. Ann Spector; and Miss Bessie Thometz's very individually designed bracelets

The May meeting will feature an illustrated lecture on the Mazon Creek Pennsylvanian Fossils of Central Illinois, by Dr. Robert Whitfield, Asst. Paleobotanist of The Chicago Natural History Museum.

Mary L. Brentlinger, Pub. Chm.
Kenilworth, Illinois

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### Orange Belt Mineralogical Society

The Orange Belt Mineralogical Society held its' March meeting at the new Technology Bldg. of the Valley College at San Bernardino, Calif.

President A. F. Dosse presided and welcomed visitors. Two new members, Mr. and Mrs. Richard Hoerr of Redlands, Calif., were also welcomed into the society.

Kenneth Garner, program chairman, introduced the speaker, Miss Ruth Simpson, archeologist (formerly of Southwest Museum at Los Angeles) who gave an interesting program entitled: "Pre-historic Rock-hounds." She related about the two great stone ages of the Paleolithic and Neolithic of South America and Central America. Her talk was supplemented with color slides showing ancient stone cutting and carvings in and around Peru, and also stone work and architecture of the Mayan Temples of Central America. She showed artifacts of the pre-Inca Indians of the Mayan Temples age. These people also used polished jade and other stones for ornamentations on their temples, tables and on images. One artifact (to resemble a skull) was carved of clear quartz, proving that even in these ancient times people knew the skill and art of cutting and polishing stones with their crude facilities.

Also some pictures revealed the astounding fact how these people had handled immense blocks of stone and which were transported many miles in many instances—some of these blocks weighing many tons and measuring from sixteen by twenty and even up to thirty feet in length—many of these being used over their doors, archways and over gate-way entrances to their temples.

Some of their stone carvings reveal intricate details and very beautiful patterns of inlaid cut and polished stones.

### April Meeting

The Orange Belt Mineralogical Society held their April meeting at the Social Hall of Valley College at San Bernardino, Calif.

The program was given by member Hugh R. Thorne, who illustrated his talk with kodachrome slides of a rock and scenic hunting trip into the Indian Cliff Dwelling country of Utah, Arizona and Colorado. Pictures were superb of the spectacular natural bridges of southern Utah. Mrs. Thorne also showed specimens of beautiful pottery done by the famed Rachele, the aged Indian woman whose work and painting on pottery is known throughout the length and breadth of the country.

The next regular meeting will be the annual banquet in May and the installing of new officers.

Mrs. Erna Clark, Cor. Sec.
611 Cypress Circle
Redlands, Calif.

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### Washoe Gem & Mineral Society

At our annual meeting on Friday, April 6th, at the City Hall, Sparks, Nevada, the following new officers were elected, to serve for the coming fiscal year ending April 4th, 1952:

President, Mr. Henry Obermanns, 2164 B Street, Sparks, Nevada; Vice-President and Program Director, Mr. Glenn E. Drew, 545 Vine Street, Reno, Nevada; Secretary-Treasurer, Mrs. Thelma Jordan, 320 Hill Street, Apt. 4, Reno, Nevada; Publicity Director, Miss Gladys Hamm, 1442 B Street, Sparks, Nevada.

J. P. Palmer, Acting Secretary
646 Humboldt Street
Reno, Nevada

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### The Whittier Gem and Mineral Society

A field trip to Red Rock Canyon and the opal field nearby was scheduled for Sunday, January 28th. Small opals are scattered through the basalt in this opal locality. On March 4th a caravan of 14 cars took off for the pegmatite locality near Neuvo, which is 5 miles off U. S. 395 in Riverside County, Calif. Here tourmalines and garnets were gathered. For April 1st a trip to Castle Butte, was scheduled, to look for petrified wood, agate, and jasper.

O. L. Evenson
10722 Rose Hedge Dr.
Whittier, Calif.

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### San Diego Mineral & Gem Society

At its February meeting the program was "A Trip to Four Peaks Amethyst Mine" with colored slides of the Four Peaks mine. Speaker, Norman E. Dawson. It was a very interesting program.

L. S. Brown, Pub. Chm.
3026 Olive Street
San Diego 4, Calif.

### Southwest Mineralogists

The Southwest Mineralogists, Inc., held their annual show April 21st and 22nd in the Palestine Masonic Temple at the Northwest corner of 41st Place and Figueroa Street, Los Angeles.

On March 12th Kilian Bensusan spoke on the "Minerals of the Duchy of Cornwall." For hundreds of years slate, tin, iron and kaolin and many other valuable minerals have been mined in Cornwall and we are indebted to the Cornish for safety lamps, safety fuses, the mining locomotive on rails and mining elevators. Cornwall is a rockhounds' paradise as fine specimens are to be obtained by going thru the many dumps.

Our field trip was to Muroc Dry Lakes area where for a terrific amount of hard pick and shovel work a small amount of petrified wood of fine quality was obtained by the most zealous.

Bea Zehrbach
5127 W. 118th Street
Hawthorne, California

### April Meeting

The Southwest Mineralogists at their April meeting enjoyed a picture of the recent eruption of Mauna Loa, Hawaii. This eruption was of particular interest because the lava flowed from the three lower vents, forming a slowly moving river half a mile wide with a temperature of around 5,000 degrees Fahrenheit. It is awe-inspiring to watch a molten river sweep to destruction all in its path.

Another picture enjoyed was a "Trip Through Mexico on Motorcycle." Lloyd Larson shared with us his experiences of seeing rural Mexico flowering in the springtime; poor, colorfully dressed natives; rich, ornate churches, the life of a people living in a civilization of a thousand years ago.

All members are hard at work preparing for our annual show on the 20th and 21st of this month, which we hope to make a huge success.

Beatrice Zehrbach
5127 W. 118th Street
Hawthorne, Calif.

### Searles Lake Gem & Mineral Society

(Box 1451, Trona, Calif.)

Recent opening of its well equipped Lapidary Hut has marked fulfillment of one of the foremost ambitions of Searles Lake Gem and Mineral Society at Trona, California.

The society secured use of two cabins from American Potash and Chemical Corporation. Oscar Walstrom headed a series of work parties during which the two cabins were joined, benches installed and the building readied for equipment. Walstrom had as committee members Eddie Redenbach and Newell Merritt.

NEW EQUIPMENT

Equipment installed includes a 16-inch slabbing saw, a trimming or shaping saw, four 10-inch grinding wheels, two 8-inch drum sanders, two 8-inch disc sanders, one 10-inch cloth buffer and one 10-inch felt buffer.

The hut, which is used only by members, is open three nights a week from 7-9 p.m. under supervision of a committee member, with George Grau as alternate. Techniques of cabochon and flat specimen cutting as well as facet cutting is being taught. Special instruction in jewelry mounting, and a class in mineral identification, under the tutelage of Modesto Leonardi is planned for the future. Opening of the hut has attracted a number of new members.

NEW PRESIDENT

Dwight Sawyer, former vice-president, is now president of Searles Lake Gem and Mineral Society. Mrs. Nedra Merrill, who took office in January, resigned because of undergoing spinal surgery, and when recovered will move with husband, Ralph, and their two youngsters to Ridgecrest. Nedra's still in a cast, but getting along fine and will be up about May 15.

George Grau is the new vice-president; Mrs. Celia Forges, recording secretary; Miss Alma Bliss, corresponding secretary; Eddie Redenbach, treasurer.

Recent speakers at the meetings have been Gae Chenard, of Bakersfield, and Jack Ryan, of the American Potash and Chemical Corporation's Research Department, Trona. Both talks were much enjoyed. Mr. and Mrs. Chenard brought a fine display of materials found in one-day trips from Bakersfield. Ryan told of the unique mining town of Flin-Flon, where he had worked for several years.

The annual 49er Party sponsored by the Society, took the form of a Costume Ball this year and netted $100 for the Trona High School Band's uniform fund.

A field trip was made on March 24 to the desert diamond area near Little Lake.

### South Bay Lapidary Society

The South Bay Lapidary Society is starting into its fourth year. Election of the entire staff of officers for another term came as a vote of appreciation for their conduct of the club's affairs. The officers remain as follows:

President, Mrs. Jane Hagar, Manhattan Beach, Calif.; Vice-President, S. P. Hughes, Torrance, Calif.; Secretary, Gordon Bailey, Inglewood, Calif.; Treasurer, Perry Williams, El Segundo, Calif.

The appointive incumbents were also continued for another term as follows:

Field Trip Chairman, Miss Ellen Barrett, No. Redondo; Drawing Chairman, Mrs. Julia Hrabak, Inglewood; Publicity and Correspondence, DeWitte Hagar, Manhattan Beach.

Those interested in the hobby are welcome to attend meetings which are held the first Monday of each month at Clark Stadium, Hermosa Beach, Calif., at 7:30 P. M.

DeWitte Hagar
Past President & Publicity Conductor

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## Syracuse Mineral Club

A regular meeting of the Club was held Friday evening, May 11, 1951, at Lyman Hall Museum, Syracuse University, Syracuse, N. Y., with 26 in attendance. Dr. Newton Chute gave a demonstration of gem cutting and polishing. Election of officers were held: Richard L. Sylvester, President; Miss Guenever Pendray, Secretary and Treasurer. The Club meets on the 2nd Friday of each month at Lyman Hall Museum.

Richard L. Sylvester, Pres.
154 Parkside Avenue
Syracuse 7, N. Y.

### Mineralogical Society of Pennsylvania

The Mineralogical Society of Pennsylvania held its organization meeting on Sunday, April 29th, at Franklin and Marshall College, Lancaster, Penna. The following officers were elected: Leonard J. Duersmith, president; Floyd Faux, vice president; Helen Bauhof, corresponding secretary; Howard Hamilton, recording secretary; Walter Bancroft, treasurer. The group will hold a field trip to Wood's Chrome Mine on May 20th.

Helen M. Bauhof
352 Church Lane
Philadelphia 44, Pa.

## COLLECTOR'S COLUMN

Conducted by A. CAL LECTOR

This column, designed to be a help to beginners in mineralogy, began with the Sept.-Oct., 1948 issue. In the last issue we commented on native copper. This time we will discuss corundum, an oxide of the abundant of all metals—aluminum.

### Corundum

Corundum, number 9 on Moh's scale of hardness, is harder than any other mineral except diamond. Corundum occurs as compact, granular, or platy masses, and hexagonal crystals that may be barrel shaped or often rough and rounded, especially when large. The two main varieties of corundum are ordinary and gem, with emery often referred to as the third variety. However, emery is not properly a mineral variety, but rather a granular mixture of corundum and other minerals, chiefly magnetite. Emery, used as an abrasive, is dark gray to black in color. Ordinary corundum is translucent to opaque and ranges in color from bluish-gray to brown and black.

The transparent or gem variety of corundum affords us two of our most expensive gems—ruby and sapphire. The name ruby is reserved for material having a rich red color; the purplish-red or pigeon's blood red being the most prized. Although true sapphire is cornflower blue, sometimes called Kashmir blue, all precious corundum of a color except red is called sapphire. Sapphire may be colorless, pale pink, yellow, green, violet, and pale to deep blue. Some gem corundum exhibits the phenomenon of asterism when cut as a cabochon, that is, a six-rayed white star is visible. These are known as star rubies and star sapphires.

The best rubies are obtained in Upper Burma near Mogok by washing gem bearing sands and gravels from primitive open pit mines. Fine crystals have been found in granular limestone in this area. Afghanistan, India, and Siam have also yielded gem rubies. Kashmir in North India, Bangkok in Siam, Anakie in Queensland, Australia, and Ceylon furnish gem sapphires. Ordinary corundum occurs extensively in Madagascar as large coarse crystals and rolled pebbles. Emery is mined on Naxos and other islands of Greece, also near Smyrna, Turkey.

Each of the varieties is represented in the United States. Emery is mined in Westchester County, New York, near Peekskill, and has been produced at Chester, Massachusetts. Ordinary corundum was formerly abundant in large crystals at Corundum Hill, near Unionville, Chester County, Pennsylvania. Fine rubies have been found in several counties in North Carolina. The best of these came from the Cowee Valley near Franklin, Macon County (see R & M, Sept.-Oct., 1950, pages 474-480). Along the upper Missouri River near Helena, Montana, sapphires of gem quality have been collected from the river gravels.

The word corundum is thought to have come from the Indian name for the mineral, Kauruntaka.

Inquire of your favorite dealer today, he has specimens of corundum in stock. He will be glad to obtain gem quality material for you if you desire.

# BIBLIOGRAPHICAL NOTES

### Ohio, An Empire Within An Empire

Columbus, Ohio—The industrial resources of Ohio are described in a new book just issued by The Ohio Development and Publicity Commission. Ellsworth Ireland, Cincinnati, chairman of the Commission, has announced that the second edition of "Ohio, An Empire Within An Empire" is being bound at the State Bindery, and that distribution will begin at once.

"Ohio, An Empire Within An Empire" is a revision of the popular book first issued in 1944. The red and gold cover has been retained and in most respects the new edition is much like the old, although a number of features have been added.

The new "Ohio Empire" contains more than 200 letterhead-size pages. Statistics on Ohio are presented graphically in 74 maps and 10 charts, most of them showing by color overprints distribution of the state's resources among the 88 counties.

Symbols on one map show Ohio's distribution of population, ranging from almost a million and a half in Cuyahoga County to eleven thousand in Vinton County. A series of 18 maps gives agricultural statistics, including the distribution of agricultural research, the acreage in corn (the most important crop) and such specialties as tapped maple trees and hives of bees.

Manufacturing distribution in Ohio is brought out by 21 maps, reporting total manufacturing employment in each county and employment distribution in 20 classifications used by the U. S. Census of Manufacturers. The state's mineral resources are shown in 10 maps locating coal fields, oil pools, and miscellaneous minerals, including salt brines and molding sands. The section on water gives the state's rainfall records since 1883, and location of stream gaging stations and the areas capable of producing much more well water.

Other important topics covered in text, maps and pictures in this compendium of Ohio industrial resources include electric generating stations and transmission lines, railroads, highways, airports, newspapers, telephone lines, radio and television stations, colleges and universities, libraries, water works, lakes and parks.

Information of particular importance on industrial location in "Ohio, An Empire Within An Empire" appears in sections on labor and industrial relations, the work of the State Employment Service, the Workmen's Compensation system, and on taxation on the state and local level as compared with other states. Other pertinent information covers the state's financial institutions, the extent of its retail and wholesale trade, and the historical position of Ohio as a representative state for marketing new products. Ohio is pictured as a center of industrial research, with about 300 research laboratories within its borders.

The Appendix gives the 1950 population of Ohio counties and municipalities of 1,000 or more inhabitants. Information of particular importance in the list of municipalities is the nature of the local water supply and sewage treatment, and companies furnishing electric power and gas service.

An organization chart of the state government in "Ohio, An Empire Within An Empire" gives a bird's eye view of the relationship of the different departments, bureaus and other agencies. This chart has been printed separately, and extra copies are available for distribution to public officials and others interested in the state government.

Because of support which has been received from industry to assist in the printing of "Ohio, An Empire Within An Empire" free copies can be furnished on request to public libraries, high schools, chambers of commerce, and other organizations where the book may be consulted by the general public.

The first extensive distribution of copies, Mr. Ireland stated, will be to the approximately 50 industrial subscribers who cooperated in the printing. Copies for private use will be sold for $10 a copy, he said, in order to be fair to the prepublication subscribers who ordered at the rate of $100 for each ten copies.

Published by Ohio Development and Publicity Commission, 707 Wyandotte Bldg., Columbus, Ohio.

### Geography of the Pacific
(Book Review)

"World War II introduced millions of Americans to the Pacific, leaving the United States with vast new responsibilities, and new possibilities for trade and investment," writes the authors of "Geography of the Pacific," published in February by John Wiley and Sons, 440 4th Avenue, New York 16, N. Y.

Edited by Otis W. Freeman and written by 13 experts on the Pacific area, "Geography of the Pacific," is a study of the human, economic and political facts affecting the Pacific Islands and their peoples. Beginning with a description of the geographic setting of this vast ocean, the book outlines the history of exploration and settlement of Pacific lands and discusses native populations. The environments of the widely-differing islands and the continent of Australia are described in detail, followed by chapters on trade routes, local problems and the future possibilities of the islands.

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Noting that this country was poorly informed about the Pacific islands at the start of the last war, the authors have placed special emphasis on the Trust Territories, formerly controlled by Japan, about which information has been difficult to secure.

The majority of the contributors—geographers and anthropologists—were serving the government in the Pacific during the war and are now employed by the United Nations, South Pacific Commission, U. S. State Department, the Bishop Museum, and other public agencies. The editor, Otis Freeman, is currently professor of geography and head of the department of physical science at Eastern Washington College of Education.

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**The How and the Why of Picking Agates:** By Robert R. Minton and Hazel C. Minton.

This is a delightful little book on the authors' experiences in hunting agates. The scenes are laid in Oregon where many stream beds and ocean beaches are good localities for gem quality agate, chalcedony, jasper, opal, petrified wood, etc. All these minerals are featured in the book and the authors not only found fine specimens of each but some of them are illustrated as well. The authors own and operate a completely modern and up to date gem shop where they not only cut and polish gems but set them in jewelry as well. One of their specialties is agate so they are well qualified to write authoritively on the mineral and have done so in a very interesting way.

This little 94 pages, 4¼ x 6 inches, illustrated book costs $1.50 per copy.

For sale by Minton's, 6405 N. Portsmouth, Portland 3, Oregon.

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# DIGGING THROUGH SNOW IN NEW HAMPSHIRE

By JOSEPH KRUGER
Turners Falls, Mass.

It was a cold, brisk morning in February when my friend, Fred Oakes, called for me. It had rained the night before, leaving everything cold and frozen. But we were determined to visit some spot or quarry, to keep our quota of "visit at least one quarry or scrap pile per month for 1951", so off we went, debating which direction we should ride—south to Portland, Connecticut, or north to Vermont or New Hampshire. New Hampshire was our decision. The old Feldspar Dump at Alstead would be the spot.

The going was good in the valley until we came up over the mountain north of Keene, N. H. There everything was covered with snow—snow, snow, and more snow! But we kept going further and higher—and more snow. This didn't discourage us any; we were going to go through regardless.

Approaching the last few miles we were slowly giving in and ready to go back, for these last couple of miles was a steep continuous climb at practically a 45° angle. But that "Rockhound Bug" started to bite so we gunned the car and started to climb, only to get stuck half way up the hill. Putting on the chains we made the top, and approaching the "dump pile" we were thankful to have the chains on, for the road to the quarry was just covered with "pretty white" snow about a foot deep.

Plowing our way into the quarry we couldn't see a single piece of rock exposed, everything was covered with snow. Determined to get at least one "piece of something" we started to dig into the snow. I dug myself a hole about three feet in diameter and broke through the frozen crust and then started digging underneath. About a half hour of this and I decided to give up so I casually hit the frozen overhanging feldspar and there before me dropped out a shiny black tourmaline. This sure was a beauty, about ½" x 2" long, and a perfect end crystal.

Pleased with my find I started away from the scrap pile and noticed Fred coming down from "the Hump" with that smile of accomplishment which one cannot help but notice on a "Rockhound's" face when a prize has been found. Sure enough, he had found the most beautiful piece of Aquamarine Beryl that I have seen taken from that pile; real gem quality and large enough to get a fair sized stone from it.

Our mission accomplished, we slowly plowed our way out of the quarry and headed for home with each a choice specimen that meant more to us than just the ordinary find because we had conquered another month, even if everything was snowed under.

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